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OVERSIGHT ON THE VA's AUTOMATED DATA PROCESSING POLICY

HEARING BEFORE THE COMMITTEE ON VETERANS' AFFAIRS UNITED STATES SENATE NINETY-SEVENTH CONGRESS SECOND SESSION ON ROLE OF MANAGEMENT IN PLANNING FOR DECENTRALIZED AUTOMATED DATA PROCESSING SYSTEMS AT MULTIPLE VA HOSPITAL SITES

MAY 5, 1982

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OVERSIGHT ON ISSUES RELATED TO THE VA'S AUTOMATED DATA PROCESSING POLICY

WEDNESDAY, MAY 5, 1982

**U.S. SENATE,
COMMITTEE ON VETERANS' AFFAIRS,
Washington, D.C.**

The committee met, pursuant to notice, at 10:08 a.m., in room 412, Russell Senate Office Building, Hon. Alan K. Simpson (chairman of the committee) presiding.

Present: Hon. Alan K. Simpson, chairman of the Senate Committee on Veterans' Affairs.

OPENING STATEMENT OF HON. ALAN K. SIMPSON, CHAIRMAN OF THE SENATE COMMITTEE ON VETERANS' AFFAIRS

Chairman SIMPSON. We will proceed. You did not have to fall deathly quiet, as I strode in the awesome towers. Well, good morning. Our effort today, I think, is to try and get some better understanding of the VA's recently announced automated data processing policy which focuses on the unique needs of individual medical centers.

I think that we also want to learn about the VA's plans for the role of management in the establishment of the distributed data processing system for the VA's network of 172 hospitals. Various attempts to bring computer support to the VA medical centers have been in progress for now almost 20 years.

I am pleased to note that the VA's Administrator, Bob Nimmo, has recognized the need for this support as being one of the most critical issues in the Department of Medicine and Surgery today. And he has requested you, Deputy Administrator Chuck Hagel, and it is nice to see you this morning, to take charge of implementing the new policies in this area.

I have come to realize that VA hospitals are woefully behind the private sector in terms of computer capability, and their directors are anxious to activate effective ADP systems immediately.

I do support the VA's effort to automate its hospitals as soon as it is possible. I am deeply concerned that the positive momentum and the initial progress currently evident in DM&S not be lost. Any further major setback in the efforts of our Nation's largest single health-care system to acquire basic computer support would be disheartening to those involved in this effort.

The consequences of a failure to provide computer capability, both in terms of quality of patient care and cost effectiveness, would be most disappointing. I think that it is important to note

that within the VA, there are obviously some strong differences of opinion.

On February 18, Bob Nimmo issued an executive order on ADP for DM&S. This directive announced a dramatic change in the VA's ADP policy, and seemed to create, I think, some confusion within the VA, and certainly within the Congress, and certainly within other Government agencies. Perhaps that can be sorted out for us today.

We will look forward to hearing the details behind this decision to decentralize the ADP system. The executive order reversed the previous policy developed by the Chief Medical Director, Dr. Donald Custis, and established a new policy currently being carried out by a project management task force consisting of Chuck Hagel and his appointees.

Subsequently, on March 31, Congressman Jack Brooks, Chairman of the House Government Operations Committee, expressed in a letter to the VA, the committee's disapproval of the decision to decentralize ADP in DM&S. This view seemed to be based on a centralization requirement of the Paperwork Reduction Act, Public Law 96-511.

Chairman Brooks asked the GSA to withdraw VA's delegated authority to purchase ADP equipment without first going through the usual processes of obtaining GSA approval for purchases. We will hear testimony from GSA on that issue later this morning. There will also be a letter from OMB in support of the VA's efforts. And without objection, it will be placed in the record at the appropriate time.

In addition to the VA and GSA witnesses today, the committee will have the benefit of hearing from people with experience in many aspects of creating ADP systems for multisited hospitals, and who may be able to assist us ADP neophytes and us laymen to better understand and evaluate the VA's plans for an ADP system.

A very basic question of mine is how well these plans will include the need to focus on central management's long-term goals for ADP in the VA. The committee remains unaware of specific long-range goals. And there seems to be no central program manager on the task force possessing the necessary expertise in all aspects of establishing such a system to the degree that he will inspire the confidence of all concerned. And I think that is very important and perhaps that will come out.

I look forward to having the VA witnesses testify on that. And before we hear the testimony from the witnesses, I do want to comment on an apparent buzz word in the controversy which threatens, I think, to confound matters even more. The VA has discussed a decentralized ADP system in its communiques concerning the new ADP policy.

My understanding is that the decision is more correctly described as one which will establish a decentralized distribution system. The difference is that the overall ADP system will have central development and policy guidance while the individual hospital centers will have freedom to assess their ADP needs, and be able to provide for activities which might exist at only one site.

The purpose of this hearing is not to decide whether decentralization or centralization is the right approach, but to hear from

several witnesses as to how central management might go about setting up an ADP system which would take into account both central office and individual user needs.

Again I strongly emphasize my desire and hope that the effort will work. I am very supportive of Bob Nimmo and Chuck Hagel and their efforts to move as swiftly as possible to see that this program does move forward. That is our job in an oversight capacity, to assist in insuring that.

I guess that this committee is interested to be assured and reassured that in the planning phase all avenues have been fully explored. The development of any automated data processing system is incredibly complex. Frequent technological improvements make it literally impossible to remain current in both theory and programs.

It is imperative that we question, reassess, and reevaluate these new program initiatives throughout the implementation process in order to insure that the goals are carefully expressed, and that the program is meeting its goals appropriately and very satisfactorily. So I look forward to the testimony this morning.

Senator Cranston has a statement that will be inserted in the record at the conclusion of my remarks. And he has indicated that he is unable to be with us this morning, but will be reviewing the record of the hearing carefully, and will have written questions to submit. Also, I will enter into the record a written statement from Senator Thurmond.

[The prepared statements of Hon. Alan Cranston, ranking minority member of the Senate Committee on Veterans' Affairs, and Hon. Strom Thurmond, a U.S. Senator from the State of South Carolina, follow:]

PREPARED STATEMENT OF HON. ALAN CRANSTON, RANKING MINORITY MEMBER OF THE SENATE COMMITTEE
ON VETERANS' AFFAIRS

Good morning and welcome to this morning's oversight hearing on the Veterans' Administration's new plans and policies for automated data processing (ADP) in the Department of Medicine and Surgery. Through today's hearing, the Committee should be able to improve its understanding of some of the priorities and considerations in the VA's efforts to establish a computer capacity throughout the Department of Medicine and Surgery.

I believe all those concerned about the VA's efforts in this area recognize the great importance of providing for efficient and effective ADP capabilities in VA medical centers and outpatient clinics. Certainly, DM&S is far behind the private sector in its use of ADP in performing and carrying out clinical functions. It is unthinkable that a 1200-bed hospital of the general quality of the Palo Alto VAMC would be operating in the private sector today without an automated pharmacy system. The lack of computer capability in the VA generally is detracting from the efficiency of the VA health-care system, and I fully support the effort now underway to use ADP to enhance basic clinical functions as quickly as possible at VA medical centers consistent with good management practice.

I want to congratulate the three top VA officials who have provided the leadership to develop this new approach. First, Administrator Robert Nimmo for his insight in providing the overall interest and guidance to make progress possible; next Deputy Administrator Chuck Hagel for providing the detailed study, evaluation and recommendations needed to develop the Administrator's guidance; and Dr. Donald Custis, the Chief Medical Director, for his efforts and strong commitment to making major improvements in ADP within his Department.

In this regard, I think that the historical record should note that much of the cause for the VA's present uncoordinated, discombobulated, and antiquated approach to medical ADP was the rigidity and intransigence previously exhibited by Office of Management and Budget officials. Until a recent change of heart or mind or both with respect to health-care application of computer technology, OMB had insisted that the VA proceed with the centralized long-term planning approach required under OMB's inherently management-information-biased Circular A-109.

I recognize that in the past those with interest in and authority with respect to the VA medical ADP decision-making and procurement activities have not always agreed on what would constitute sound management practice, and that in a relatively new field with rapidly changing technology, such as ADP is in terms of both hardware and software, consensus is difficult to obtain. However, DM&S -- and individual VA medical centers -- cannot afford a continuation of the present paralysis and fragmentation in medical ADP development. Questions of balance between VA Central Office and the field or between desires of certain Washington oversight entities and the needs of veteran-patients could be debated interminably. Further complicating these questions of achieving appropriate balance is the great diversity of the 172 medical centers and their varying needs, desires, and competencies. Hence, it is important that the stress placed on the development of common components to serve the common needs of the individual facilities be tempered with a large dose of flexibility to take into account the wide variations among these facilities.

Further regarding the need for balancing competing considerations, a question unanswered at this point -- and perhaps one that is unanswerable now -- is how the new ADP approach can be developed in such a way as to get the most out of it in terms of producing management information without permitting management-information purposes again to become preeminent in the process. I hope this hearing will help develop some preliminary answers to this question.

The development of medical ADP in the VA has long merited the high level attention and consideration now being provided. The decisions to be made in this area are not clear cut, and medical ADP has had an unfortunate history in the VA to this point. But there is now reason for optimism that Deputy Administrator Hagel and Chief Medical Director Custis will provide the leadership and foster the unity of purpose necessary to build successfully and responsibly an effective ADP system in the VA health-care system.

I look forward to reviewing the testimony of today's witnesses.

PREPARED STATEMENT OF HON. STROM THURMOND, A U.S. SENATOR FROM THE STATE OF
SOUTH CAROLINA

MR. CHAIRMAN:

I am pleased to receive testimony concerning the automated data processing policy of the Veterans' Administration within the Department of Medicine and Surgery.

I first want to commend Administrator Nimmo for recognizing the importance of reviewing and re-evaluating the VA's policy concerning ADP within DM&S. The 20 year evolution of the ADP policy within DM&S has been spotted with controversy. It is my hope that the recent action taken by Mr. Nimmo to alter the direction of this policy will result in the comprehensive development of ADP within DM&S.

Mr. Chairman, the fact that we are conducting this hearing today reflects your recognition of the importance of ADP policy. Regardless of the direction which is taken in developing ADP, it will be an expensive undertaking, and this Committee should be satisfied that the VA's policy is one which is flexible enough to improve local hospital operations and, at the same time, provide improved utilization of management data.

I want to welcome the witnesses who will testify today, and I look forward to the testimony on this important matter.

Chairman SIMPSON. So at this point, we will proceed with the panel of four: Chuck Hagel, Deputy Administrator of the Veterans' Administration in association with Dr. Donald Custis, Chief Medical Director, accompanied by Mr. Jack Sharkey, Assistant Administrator for the Office of Data Management and Telecommunications; and Dr. Kenneth Dickie, chairman of the ADP Project Management Task Force for the Department of Medicine and Surgery.

So if you will, please, gentlemen. We certainly appreciate hearing your testimony. And I believe that you have been advised of the time constraints. And I would appreciate your proceeding. Thank you.

TESTIMONY OF CHARLES T. HAGEL, DEPUTY ADMINISTRATOR, VETERANS' ADMINISTRATION, IN ASSOCIATION WITH DR. DONALD CUSTIS, CHIEF MEDICAL DIRECTOR, ACCOMPANIED BY JACK SHARKEY, ASSISTANT ADMINISTRATOR, OFFICE OF DATA MANAGEMENT AND TELECOMMUNICATIONS; AND DR. KENNETH DICKIE, CHAIRMAN, ADP PROJECT MANAGEMENT TASK FORCE, DEPARTMENT OF MEDICINE AND SURGERY

Mr. HAGEL. Mr. Chairman, good morning. Thank you for the opportunity to appear before your committee to discuss automated data processing plans for the Department of Medicine and Surgery in the Veterans' Administration.

As your committee is aware, we have embarked upon a program to equip the VA hospitals with suitable automated data processing systems that will provide for improvements in the delivery of health-care services to our Nation's veterans.

Since the announcement of this policy on February 18, we have proceeded with the task of program planning and the detail necessary for success in the undertaking of this scope and complexity. We will present this plan in its entirety in September. However, we are prepared this morning to preview elements being considered in our plan both in my prepared testimony for this hearing and during the questioning process.

If you would allow me, Mr. Chairman, I would now like to briefly turn my attention to some of the facts of life of this undertaking. The VA has chosen to initiate and complete a complicated task, a task which is made up of many interconnecting pieces. It cuts across the accountability lines of every veterans' oversight committee and agency in the Government. We are not intimidated or frightened by this responsibility. We welcome it, and we welcome the guidance and assistance that these committees and agencies will give us in helping the VA put this new ADP program together.

I have met with representatives of these committees and agencies on a number of occasions, and will continue to meet with them and solicit their support and counsel and to keep them informed of our progress.

Since the Administrator has tasked me with overall responsibility for agencywide information and resources management in ADP systems, I appreciate firsthand the intricacies and difficulties involved in accomplishing this job.

But I did not come to the VA, Mr. Chairman, to help manage or preside over the status quo. I accepted the President's nomination

with a commitment to help improve things for our Nation's veterans regardless of the consequences. I have made some mistakes. All of us involved in this effort have made some mistakes, and we all probably will make more. But if we make more mistakes, it will be because we are not afraid to fall on our faces a few times to get this program completed.

I am also mindful of pressures and interests outside of the Government. These interests in our new program are legitimate. But our decisions will be based on what we feel is right for the Veterans' Administration and American veterans.

Mr. Chairman, we are committed to get the answers that we need to develop an ADP system within DM&S that will bring improved health care to veterans, assist our 172 medical centers, and help the Chief Medical Director manage DM&S more cost effectively, and with more current, valid, and sophisticated information.

The Administrator's executive order was a management decision announcement, an announcement of a new ADP direction for DM&S. It was never intended to be a program plan or a detailed road map. But it did set us on a new course, and directed of number of studies, evaluations, inventories, and examinations to be completed before a program plan could be developed.

We are following those instructions and carrying out those directives. And as I said, we will be prepared to present our ADP program plan for DM&S in late September. This program is going to work, Mr. Chairman. It has to, because we will not get another opportunity like this again. But most of all it is going to work, because there are a great number of dedicated and talented people who want it to work.

This includes individuals both inside and outside the VA, especially the veterans' service organizations who have been so supportive of our efforts. We ask this committee not for any special privileges or considerations, but only that VA be given a fair chance to develop a much needed comprehensive ADP system for DM&S.

At this time, I would like to ask the VA's Chief Medical Director, Dr. Don Custis, to offer his thoughts about the new ADP policy in DM&S. Thank you, Mr. Chairman.

Chairman SIMPSON. Thank you, very much. Yes, Doctor, please.

Dr. CUSTIS. Thank you, Mr. Chairman. I, too, am pleased to be here. As I am sure that you are aware, filling a need for computer facilities has been one of the medical department's highest priorities before and during my tenure in the Veterans' Administration. Despite sincere and prodigious efforts on the part of many players, our medical centers continue to lag far behind the private sector in access to this critical, automatic, modern, health-care technology, and management capability.

Our faltering efforts for the past 5 years have been publically analyzed and ridiculed by both fair and unfair critics. Those few that have all of the facts, however, realize that whereas failure is an orphan, there is enough blame for many of us to share, both within and outside of the agency.

And speaking of disavowals, the previous policy was not established by the Chief Medical Director. It was imposed upon the Department of Medicine and Surgery. In retrospect, we were destined

to fail, because of the consistent cross purposes pursued by the various vested interests.

The loser, of course, has been the veteran patient. But I submit that there has been one great gain derived from these years of controversial interplay. And that is a universal consensus now, that a DM&S ADP system simply must be built. And a willingness finally for all to join ranks in its achievement.

It could not have been more timely for a new VA Administrator to openmindedly review a confused and confusing ADP program effort. His objectivity was refreshing. And it was with genuine satisfaction that I joined him in support of the reoriented program outlined in his executive order.

The very positive reaction of our hospital directors sustained my own belief that this decision promised an end to a long period of frustration, as well as a definitive option to achieving, in the shortest possible time, improvement in delivery of health-care services to the veteran.

In keeping with Mr. Nimmo's directive, the DM&S ADP office has undergone a management audit and a restructuring that has been approved by the Administrator. A new program director to head this office and serve as the medical information resource manager has now been selected. He has accepted the position.

He will depend heavily upon ODM&T for technical assistance, and continue to utilize the very capable Dr. Dickie as a consultant after the program management task force has completed its interim groundwork on the decentralized health-care automated system.

In the pursuit of a decentralized health-care automated system, we have no intention, however, of placing all of our eggs in one basket, be it a system or a language. As we show in the prepared testimony, we intend to continue with the consulting contract by Deloitte, Haskins & Sells.

I consider that their assignment to design a comparative evaluation program and our plans to establish suitable pilot test installations for evaluating commercial systems against our own to be a most important feature of our program.

I feel that it is prudent and necessary to continue with enhanced pharmacy beyond our medical district 17, while other installations featuring alternate systems can be evaluated. Ultimate decisions will be based on demonstrated performance and cost effectiveness.

Our management information data requirement is being completely reestablished, so that our reporting system, enhanced by our new hospital capabilities, will provide management information that is more responsive to our needs in the difficult years ahead.

I have encouraged all of the hospital directors to respond to our request for ADP planning information with confidence that we are aiming at technical excellence along with careful management. The medical and administrative staffs of our hospitals represent a significant resource which can be used to great advantage in assisting the development of our ADP plans.

And in particular, I am encouraged by our ability to organize dedicated user groups from among those hospital staff members with ADP skills. Although the clinical application of medical auto-

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mations is the driving imperative of this program, the spinoff of management data is invaluable.

The future promises difficult times for our hospital managers, who face increasing mission requirements along with increasingly limited resources. Access to suitable ADP capabilities will be a critical adjunct to their management skills. I guarantee that every effort will be made to support these directors in meeting their needs in this program.

To this end, I have directed that the plans for budget and staffing be aggressively pursued within the central office. As is shown in the prepared testimony, we are not yet able to specify our future budget needs. We are encouraged to see, however, that we can inaugurate this program with relatively little funding outside of our immediate resources.

There is much to be done, however, in establishing the firm plans on which we can base our requests for further consideration. We shall be prepared to discuss these factors within the very near future. All of us are grateful to this committee for its past assistance and forbearance.

Please know that all of us in the agency realize the consequence of another failure in this program, the absolute necessity to join ranks, and the need for all the help that we can muster. I thank you, Mr. Chairman.

Chairman SIMPSON. Thank you, Doctor.

[The prepared statement of Charles T. Hagel, Deputy Administrator of the Veterans' Administration, the May 3, 1982 letter from the Office of Management and Budget referred to earlier by Chairman Alan K. Simpson, and the responses of the Veterans' Administration to written questions submitted by Hon. Alan K. Simpson, chairman of the Senate Committee on Veterans' Affairs, and Hon. Alan Cranston, ranking minority member of the Senate Committee on Veterans' Affairs, follow:]

PREPARED STATEMENT OF CHARLES T. HAGEL, DEPUTY ADMINISTRATOR OF THE
VETERANS' ADMINISTRATION

Mr. Chairman and Members of the Committee:

Thank you for the opportunity to appear before your Committee to discuss Automated Data Processing (ADP) plans for the Department of Medicine and Surgery (DM&S) in the Veterans Administration (VA). With me this morning is Dr. Donald L. Custis, Chief Medical Director (CMD), Dr. Kenneth Dickie, Chairman, Project Management Task Force, DM&S, and Mr. Jack Sharkey, Assistant Deputy Administrator for Data Management and Telecommunications (ODM&T).

As your Committee is aware, we have embarked upon a program to equip the VA hospitals with suitable Automated Data Processing (ADP) systems that will provide for improvements in the delivery of health care services to our Nation's veterans. Since the announcement of this policy on February 18, we have proceeded with the task of program planning in the detail necessary for success in an undertaking of this scope and complexity. We will present this plan in its entirety in September. However, we are prepared this morning to preview elements being considered in our plan.

You have requested, Mr. Chairman, that one of our focuses today be on the role of management in the implementation of ADP decentralization in DM&S.

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It is clear that your Committee recognizes, as have we, that system management is an element of vital importance in this undertaking. We have felt from the outset that our ability to maintain these medical ADP systems in close alignment with the needs of the health care provider, in reality "the user," is critical to the success of this venture. This would require that a large measure of responsibility for configuration and operation of the system be placed as close to the level of the user as possible. In the Executive Order that launched this effort the Administrator chose to place this authority in the hands of the hospital director. This assignment of primary responsibility of needs determination at the hospital level, commonly referred to as "decentralization," has become a prominent feature of our clinical automation program.

This close relationship between the management of the system and the operation of the system makes any discussion of one element difficult without including some discussion of the other. As a point of departure, let me clearly state the primary goal of this program; that is, to create a distributed Automated Data Processing Equipment (ADPE) operation for use by Veterans Administration Medical Centers (VAMC) that will materially improve the quality and effectiveness of clinical health care services for our Nation's veterans. As you know, VA medical centers lag far behind the private sector in effectively utilizing data processing and in general computer capability. For this reason an innovative approach to meeting this critical need was warranted.

We look to the hospital directors to make the program available to the health care providers in a form that will improve service to veterans. It is our expectation, that given an ADP system within

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DM&S that is flexible and capable of operation with a high degree of user participation, these users will be encouraged to innovate and explore new approaches within their specialties that will make ADP as creative a tool in medical operation as has been the case in other areas of industry and commerce. Modern information management theory supports this expectation, but it is clear that only careful management by the VA, from bottom to top, will make this happen within reasonable bounds of cost and technical accountability.

Mr. Chairman, I would like to address the role of management information in light of this new initiative. Normally one thinks of the accumulation and presentation of management-oriented information as the primary purpose of an ADP system. Our emphasis, however, is directed toward improving hospital operations, where patient-oriented data and patient service are the principal considerations. To be sure, the system will generate large amounts of management data, and we have made some provision that a sufficient amount of computer capability will be made available to aggregate this data.

We expect that this ADP initiative will improve local management of the hospital, an important consideration since the primary unit in the VA health care system is the hospital. To this end, we have given the hospital director the ability to tailor his/her system to fit local information needs, including the charter to determine ADP requirements locally, to prioritize ADP needs, to participate in the selection of alternative hardware and software solutions, to determine cost effectiveness, to plan and estimate the resources required, to direct certain limited local procurements and to operate computers within the hospital. They have also been given responsibility to manage and support individual computer inventory with discretion and efficiency. The needs will be specified in the

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budget and implementation plans, which the director has been charged to submit. Each hospital director shall prepare and submit an accurate inventory report and a five year ADP implementation plan.

It is important to note, however, that the responsibility to direct and manage the overall decentralization process, to ensure optimal use of resources, to provide guidance, and to plan and budget for total ADP support in DM&S is reserved to the program management in VA Central Office (VACO), which will maintain control primarily through the exercise of final review and approval authority on the hospital plans. VACO will also undertake responsibility to insure compliance in all activities with the body of regulations that is established in the federal system.

The Administrator has assigned the Chief Medical Director overall responsibility for the ADP programs within DM&S.

The Executive Order required, however, a review within DM&S of the organization involved in the development and operation of medical ADP programs, in order that the priority assigned to this program be properly supported. This review has led to a plan to restructure the organization under a new position, Information Resources Manager (IRM), reporting directly to the CMD. In keeping with those regulations established by the Paperwork Reduction Act (PWR), the IRM will be responsible for all information processing activities in DM&S, including those clinical systems to be established under this program as well as those involved in medical management information systems and planning.

Presently medical management information is processed in the Automated Management Information System (AMIS) and the Patient Treatment File (PTF) system. Matching the plans for modernizing the

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clinical services functions, the entire structure of medical management information and reporting needs is under review. This is expected to produce a new family of pertinent management-oriented reports that will benefit from the presence of the powerful data gathering capabilities anticipated in the hospitals. The reports themselves will be largely assembled and produced at the batch data processing facilities in one or more of the VA Data Processing Centers (DPC), as is presently the case.

Pending the completion of DM&S organizational review, a Program Management Task Force (PMTF) was established as an interim organization dedicated to launching the newly established program. The PMTF presently performs all of the planning, oversight and technical management functions on an executive basis normally associated with program management, drawing upon expertise from the field operations and from VACO as necessary. The PMTF function will be integrated into the Information Resources Management Office (IRMO) which will emerge in the reorganized DM&S program activity.

As for the role of agency management, the Administrator has assigned overall responsibility for agency-wide information resources management to me. I serve as the Agency's senior official to ensure the efficient and effective management of all information and data processing activities, as is required by the Paperwork Reduction Act (PWR) and General Services Administration (GSA) Temporary Regulations 62 and 64. As the Agency's senior official, I am responsible for establishment of this program, as well as all other ADP systems. Similarly, I also must insure that the systems, when established, meet performance and cost standards. This calls for careful attention to the central administrative process that will emerge to manage this "decentralized" concept.

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The administrative process we envision for planning and budgeting will start with the individual hospital planner, proceeding to the established district, regional, and VACO medical and executive administrative channels for approval. In this way, ADP funding and resource needs will be routinely evaluated against other individual hospital needs, a process which we feel, will maintain the proper perspective between health care and other hospital ADP processing requirements.

Central Office management thereafter will ensure that the scarce resources available for data processing support will be wisely expended. The Administrator recognizes the VA has had ADP management problems. That is why he asked me last October to direct the work of an ADP review team in identifying ways to improve the management of this vital resource. We have made progress since that time in working towards establishing controls to overcome past deficiencies.

At this time I would like to provide a brief summary on our progress to date. We have devised a plan covering the implementation of the program during the next 12 months. Approximately fifty-seven (57) hospital sites from among the 172 in the VAMC system have been selected to receive systems support in the first two phases of the program. This is shown as Attachment I. Inventory data and initial hospital plans for most hospitals as required by the Executive Order, have been submitted and are being compiled and reviewed. Our initial analysis indicates that there exists sufficient VA inventory in terms of basic computer assets, excluding terminals and ancillary equipment, along with sufficient management expertise, interest and ability to ensure that the first phase of the implementation plan can be accomplished.

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The complete program plan previously described, to be available in September 1982, will deal with the entire hospital implementation strategy in detail. For preliminary planning purposes, we have assembled the VA hospitals into three groups, designated as Phases I, II, and III. This decision was based upon initial estimates of available hardware, budget, support personnel and the ability of the hospital to accommodate a significant technical addition to its operating capability. These phases are dependent upon budget support available in FY '82, '83, and '84 respectively. Should these projections prove valid, it is anticipated that a basic ADP capability can be established in most VAMCs by late calendar year 1984. Phase I, presently underway, is an effort to place existing computer assets into constructive system operation in the model prepared for general hospital development. Phase II is seen to overlap Phase I somewhat, since there exists a cadre of ADP equipment which to some degree can be upgraded and augmented to support approximately 19 installations. The number given previously as fifty-seven (57), represents a possible two year total in the event that all factors--equipment, support and funding--can be favorably aligned.

In terms of the mechanics of the process, it is our intention at some future date, perhaps by FY '85, to have the entire budget formulation originate at the hospital director's level. In the intervening years funding shall be processed through two channels: (1) VACO anticipates the ability to provide certain funds to provide basic hardware for initial hospital systems; (2) each hospital will be required to provide for certain hardware supplements and additions, as well as for installation costs, operating and support costs, including providing for those personnel costs and FTEE provisions that, aside from purely cost considerations, involve

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accommodation with ceiling requirements. A study leading to projections of these costs at both levels is underway, which is intended to produce working data by June.

VACO ADP funding needs are presently visible to the extent that the following can be offered, representing the initial system hardware cost.

FY '82	\$5 Million
FY '83	\$11 Million

Considering the indefinite character of other elements in our funding plans, it is difficult at this time to go into further detail.

The FY '82 funding requirements are seen quite accurately to cover the establishment of the first 19 sites previously described as Phase I of the program. The FY '83 funding will cover those hardware requirements foreseen for subsequent sites.

VACO presently has, as a visible asset, those minicomputers that previously were intended for nationwide expansion of APPLES. Some of these are available for assignment elsewhere. However, there is an immediate need for terminals to allow these redistributed computers to be placed into operation. Those terminals destined for use in the Enhanced Pharmacy installations are identified, and arrangements are presently underway with GSA to permit acquisition of these units. The terminals that will be necessary for the redistributed computers are included in the FY '82 funding (\$5.0 Million) requirement given earlier.

The DM&S Plan is organized to consider operating software from all sources. The VA is presently in possession of two families of

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medical operating software. One of these systems, the Advanced Pharmacy is already in operation in Medical District 17, covering four Chicago hospitals. Presently, we are considering the possible expansion of this service.

The software that has been developed by VA hospitals in response to local needs in the past, commonly called the MUMPS software, has been organized into a system context and is undergoing evaluation, standardization and certification for possible use within the hospital system.

Private and proprietary software continues to be of interest because of its potential for efficiency and cost savings.

It is our objective to review, test and evaluate a wide array of candidate systems from the private sector as well as growth versions of our own software. For this purpose, the process for selecting and evaluating candidate software sub-systems into the DM&S Plan is being formulated. As a first step, we have decided to continue the medical ADP systems consulting contract with Deloitte Haskins & Sells established earlier this year. This contract will provide a basis for on-going evaluation and selection of medical ADP operating systems and hardware by establishing a comparative test methodology and defining cost benefit and systems effectiveness criteria.

We are contemplating a follow-up series of pilot test programs starting in mid FY '83 that will carry on the process of comparative candidate evaluation, selection and cost benefit demonstration. It is anticipated that in addition to pilot tests that will be running

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within our own environment using Enhanced Pharmacy and MUMPS operating packages three competitive systems of commercial origin will be evaluated in FY '83 so that the benefits and effectiveness of a wide variety of candidate hospital support systems can be measured.

The work anticipated from Deloitte, Haskins & Sells will be supplemented and carried forward for future systems needs by the VA's Office of Program Planning and Evaluation (PP&E). The present cost benefit study activity, largely pharmacy oriented, will be expanded to cover all aspects of the projected program so that growth in the system will be properly related to cost benefit considerations as it progresses. The Program Plan will show the scheduled life cycle and cost benefit studies in their relationship to related program activities. It is axiomatic that a suitable program of comparative cost benefit and life cycle cost comparisons must await not only definition of suitable criteria, but the designation of representative systems of comparable functional capability. The "design" of such a test program therefore will occupy the time of Deloitte Haskins & Sells and our own PP&E groups in the immediate future.

While a high degree of user involvement in software development is a principal program objective, it remains VACO responsibility to provide an umbrella of technical regulations and performance standards which will guide the hospitals in their plans, and maintain the parameters within which this process will be carried out. Our plans call for technical assistance and control to be exercised through six regional Verification and Development Centers, (VDCs) as described in the Executive Order. Plans to implement these Centers with staff, resources and operating directives are underway with a view towards early VDC operational capability.

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Pending this achievement, however, the total expertise in these areas that now exists in VACO is being organized to support the initial program implementation activities. These immediate actions will not only design what will become the standards and practices for software selection and development, but will establish the early program operating software packages and systems, pilot tests and training programs that are required in the early program phases. The VA's Office of Data Management and Telecommunications (ODM&T) has significant experience in these matters that can readily be applied to this program. ODM&T is working closely with the PMTF and DM&S to develop these objectives.

As described in the Executive Order, each hospital ADP system will be provided programming in three administrative/clinical functional areas: Admission, Discharge, Transfer and Scheduling (ADTS), Pharmacy and Clinical Laboratory. Portions of these functions are foreseen to be capable of benefitting from some degree of customizing on a local basis; however, as a matter of management standardization for the early program phases, hospitals will operate in these areas with functionally equivalent software.

We are actively engaged in a number of related tasks leading to the completion of our comprehensive program plan for DM&S, which will be available in September. My office has been making progress on interpreting the "decentralization" concept for DM&S into a coherent policy statement. The field ADP plans are currently being reviewed by the PMTF. In DM&S, IRMO will become the responsible focal point for consolidating plans submitted by the DM&S field activities. Common requirements will be consolidated for centralized procurement action. The determination of what

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procurement can be centralized or decentralized will be made by VACO. VA's Office of Procurement and Supply (OP&S) has been tasked to develop a workable procurement strategy and process to support these objectives. Built into this procurement process will be total compliance to requirements of all federal procurement regulations. In addition, all management information requirements are under intense scrutiny with the aim of streamlining management reporting within DM&S.

We are also assigning to VA's Office of Personnel and Labor Relations (OP&LR) the responsibility for determining what personnel actions may be necessary when determinations are made regarding transfer of certain functional ADP responsibilities from ODM&T to DM&S. We will, of course, avoid duplication of employee effort between these various facilities as well as provide maximum protection for employee rights and security.

As a final subject, I would like to touch upon some other intentions we have relative to the Program Plan for this system. There has been a significant amount of planning and analysis done in the past that has treated the considerations and options involved in the general health care automation problem in great detail. We thoroughly reviewed this material and information before making a decision to go ahead with a new ADP strategy for DM&S. However, we will establish further supplemental studies and analyses that will constructively address the costs, benefits, risks and necessary future program actions. The Program Plan will contain provisions for all of the studies that will indicate courses of action that support functional requirements, anticipated orderly growth, and any needs to supplement what is presently seen as the model(s) for hospital application(s).

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It is also recognized as essential that, despite our genuine interest in placing into constructive use as fast as possible those computers whose status has been sub optimal, we must arrange with care those tests, pilot evaluations and training programs leading to certification of our proposed systems. In this way, timely confirmations of system benefits, design and performance will be generated for use at decision milestones that, in turn, will involve significant commitments to missions and expenditures. Our Program Plan will demonstrate in detail how this will be accomplished.

Mr. Chairman, we know we do not have all the answers. But, we are committed to get the answers we need to develop an ADP program within DM&S that will bring improved health care to our Nation's veterans, assist our 172 Medical Centers and help the Chief Medical Director manage DM&S more cost effectively and with more current, valid and sophisticated information.

The Administrator's Executive Order was a management decision announcement -- an announcement of a new ADP direction for DM&S. It was never intended to be a program plan or a detailed road map. But it did set us on a new course and direct that a number of studies, evaluations, inventories and examinations be completed before a program plan be developed. We are following those instructions and carrying out those directives, and will be prepared to present our ADP Program Plan for DM&S in late September.

Thank you again, Mr. Chairman, for the opportunity to appear before your Committee today. My colleagues and I will be pleased to answer your questions.

ATTACHMENT I

Phase I - VAMC Sites

VAMC Albany, NY
 VAMC Bay Pines, FL
 VAMC Birmingham, AL
 VAMC Brooklyn, NY
 VAMC Fort Howard, MD
 VAMC Hines, IL*
 VAMC Lexington, KY
 VAMC Livermore, CA
 VAMC Loma Linda, CA
 VAMC Manhattan, NY

VAMC Martinez, CA
 VAMC Oklahoma City, OK
 VAMC Palo Alto, CA
 VAMC Perry Point, MD
 VAMC Pittsburgh, PA
 VAMC Salt Lake City, UT
 VAMC San Francisco, CA
 VAMC Tucson, AZ
 VAMC Washington, DC

*NOTE: Includes four sites in Medical District 17 to be equipped with the Advanced Pharmacy System.

Phase II - VAMC Sites

VAMC Altoona, PA
 VAMC Ann Arbor, MI
 VAMC Augusta, GA
 VAMC Biloxi, MS
 VAMC Boston, MA
 VAMC Buffalo, NY
 VAMC Cleveland, OH
 VAMC Columbia, MO
 VAMC Columbia, SC
 VAMC Dallas, TX
 VAMC Decatur, IL
 VAMC Denver, CO
 VAMC East Orange, NJ
 VAMC Fresno, CA
 VAMC Houston, TX
 VAMC Indianapolis, IN
 VAMC Kansas City, MO

VAMC Long Beach, CA
 VAMC Madison, WI
 VAMC Miami, FL
 VAMC Mountain Home, TN
 VAMC Omaha, NE
 VAMC Portland, OR
 VAMC Reno, NV
 VAMC Richmond, VA
 VAMC San Antonio, TX
 VAMC Seattle, WA
 VAMC Sioux Falls, SD
 VAMC St. Louis, MO
 VAMC Syracuse, NY
 VAMC Wadsworth, CA
 VAMC West Haven, CT
 VAMC White River Junction, VT
 VAMC Wilmington, DE

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

MAY 3 1962

Honorable Alan K. Simpson
Chairman, Committee on Veterans
Affairs
United States Senate
Washington, D.C. 20510

Dear Alan:

This is in response to an informal request from your staff regarding the position of the Office of Management and Budget (OMB) on the ADP policy being implemented at Veterans Administration (VA) Medical facilities.

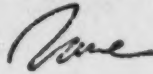
As you know, OMB has taken a great interest over the years in both the development and management of ADP activities at the VA. The medical ADP "decentralization" policy is one which we have reviewed at great length with VA officials, and one which we support. As we see it, it is "decentralized" only in the sense that all hospitals are not linked into a single, integrated network. Otherwise, it is a policy which requires centralized coordination, planning and procurement. We believe that the VA Administrator, through his executive order and the coordinating and oversight groups that have been established, will ensure that ADP is properly managed to improve the efficiency and quality of services to veterans.

We are aware also of legitimate concerns raised by the Senate Government Operations Committee regarding non-standardized systems, duplication and increased costs. It is our understanding, from the executive order and subsequent discussions with VA officials, that the new policy is one whereby each hospital will be provided a set of "core" ADP applications which will be centrally coordinated and controlled, and that individual hospitals will be allowed to add packages for other applications to meet their special needs. We understand further that under this policy the VA will review and approve equipment requests, and will acquire needed equipment through

centralized procurement actions. We have also been informed that the agency is developing a detailed plan for carrying out the Administrator's policy, and we expect to review it as soon as it is available.

Let me assure you that we are monitoring VA's management of its ADP resources to ensure that these resources are utilized in the most effective and cost-efficient manner.

Sincerely,



David A. Stockman
Director

RESPONSE OF THE VETERANS' ADMINISTRATION TO WRITTEN QUESTIONS SUBMITTED BY HON.

ALAN K. SIMPSON, CHAIRMAN OF THE SENATE COMMITTEE ON VETERANS' AFFAIRS

Question 1. At this time, can you describe for the Committee the goals for DM&S's automated data system in one, five and ten years? Testimony was received which indicated that software packages exist today which allow such planning.

Answer. It is the objective of the program in the short-term to establish a basic ADP capability in each VA Medical Center (VAMC) that will serve the immediate administrative and clinical service needs at that site. Progress towards this goal during this period will be governed largely by three factors:

- (1) Budgetary constraints that will operate year by year to control the rate of systems' implementation at each site;
- (2) development of management resources at each site required to support and operate ADP systems in an efficient and productive manner; and
- (3) the ability of the program management function to make available to the hospitals, software and service options that are economically sound and suitably related to real hospital needs. This requirement underscores the burden on the agency to establish and administer effective analytical and comparative evaluation and test programs.

It is felt that the software packages presently available to the VA, including those known to be in the private sector provide a sound basis for this plan.

Long-term objectives may be described most succinctly in two groups: (a) those additional technical improvements and growth features that will become available from ongoing evaluation programs, such as net working, national data bases, etc., and (b) those that will emerge as a result of involvement and interest of the user-health care provider.

The capability of a highly motivated user for this purpose is regarded as an attractive resource in this program. The present array of software packages serves well as the basis for initiating this development process.

Question 2. Chuck, I understand that Frank Carr from GSA has met and discussed with you the recommendations he will present here today. Will you tell us specifically to what extent you concur in GSA's recommendations and how they will affect your initial efforts to implement what you call "Phase I" of your ADP plan?

Answer 2. We feel that we concur completely with the spirit as well as the specifics of the GSA recommendations. As indicated in Commissioner Carr's testimony, his recommendations were offered in the spirit of improving the ADP program management control process in the VA. That objective certainly underlies all our Administration is trying to do in our ADP initiatives. As for the specific recommendations, we feel that our medical program plans directly address four of the five features that Commissioner Carr offered:

(1) We are formulating our program on a long-range mission need basis, allowing as much flexibility in management and implementation at the user level as can be maintained consistent with basic federal ADP procurement regulations;

(2) we are moving, through reorganization and realignment of all information management resources within the Department of Medicine and Surgery (DM&S) to strengthen the program oversight process; and we have acquired an individual of proven experience and stature in the ADP field, Mr. Roger Cooper, to assume the leadership of this DM&S organization; and

(3) we are designing our medical ADP program to take full advantage in its early phases of all available systems opportunities, in house and commercial, with the expectation that through subsequent pilot systems evaluation programs, final system selections can be made on the basis of demonstrated performance and benefit.

The remaining recommendation concerning the use of a national ADP advisory panel in VA planning is necessarily somewhat removed from our immediate program activity. We are presently investigating the experience of other agencies who have established these panels in order that our proposed program in this area will be as productive as possible.

Question 3. Dr. Custis, the Chief of DM&S, and Jack Sharkey, the head of the Office of Data Management and Telecommunications (ODMT), were not involved in the presentation of the new ADP policy when hospital directors from the East Coast were briefed on April 7. They are before us today -- can you explain, first, why they were not involved earlier, and second, how they have become so now?

Answer 3. Two meetings were held to brief the hospital directors: those from the western regions on March 26 and those from the eastern on April 7. Dr. Custis and Jack Sharkey participated in the meeting on March 26. Jack Sharkey similarly participated in the April 7 meeting. Dr. Custis, constrained by a conflicting commitment, was represented by Dr. Earl Brown, Associate Deputy Chief Medical Director, at the second meeting.

Question 4. To what extent have you and the task force analyzed the need for sharing information between data systems? I would suggest if this has not been done thoroughly that perhaps the Office of Program, Planning and Evaluation (OPP&E) would undertake such a project and let the Committee know the results.

Answer 4. The need to share information between individual hospital systems will evolve from two considerations: (a) those functions common to hospitals, which, when shared, will produce cost benefits, and (b) that medical information which, when made available system wide will improve the quality and effectiveness of health care. The present intention is to provide for both eventualities in the medical ADP systems program.

Pending determination of a broad spectrum of cost-benefit criteria through the Deloitte Haskins & Sells consulting contract and its follow-on activities, work is proceeding in PP&E to define with precision the cost-benefit advantages in sharing pharmacy operations information. In the second area, limited sharing of medical information, in the form of tumor and other clinical registries, is already underway and will be considered for expansion. OPP&E will be involved in this part of the program as it is expanded.

Question 5. Do you feel confident that there is demonstrated evidence that the basic core systems can be hooked into network without altering the initial programs?

Answer 5. Experience to date indicates that the MUMPS based software along with other software proposed for use in the medical ADP system can accommodate networking in a variety of modes. In the general case, networking is independent of language beyond the point where each element in a distributed system operates with software designed to the same standards and specifications. Provision is being made in current software design to accommodate networking in terms of what information may be required to be available. A decision to establish a network will, however, require additional software provisions largely to be superimposed on existing systems.

Question 6. Would you describe how you have determined that \$5 million will be needed for the remainder of FY '82. Was it based on information gained from the VAMC's inventory of existing computers? What will that money be used for?

Answer 6. Three considerations were operative in developing Phase I:

- (1) That a cadre of suitable equipment is already available as shown by the VAMC inventory reports;
- (2) that a baseline system design can be achieved that meets acceptable first phase operational objectives for the proposed sites; and
- (3) that the proposed sites be able to manage automated facilities if these were to be provided in this time period.

Five million dollars emerged as the preliminary cost estimate for this proposal, based principally on hardware and some software costs needed to augment the present inventory to achieve the Phase I FY '82 objectives.

Question 7. Have you received from all VAMC's their current inventory of micro- and mini-computers?

If so, what did you learn and will you share your findings and the report with the Committee?

Answer 7. The preliminary results of the inventory have been received from all hospitals. We are validating the list against the supply officer's list at each hospital to insure that minor systems have not been overlooked. It will be made available to you no later than June 30.

Question 8. Specifically what type of ADP training is planned for hospital personnel and who will manage that effort?

Answer 8. It is important to emphasize that the proposed medical ADP program does not require user operator skills that are significantly different from those normally associated with any interactive user-oriented system. Operator training for all levels, clerical to professional, will be conducted as part of the pilot test phases of the program implementation at each hospital facility. In addition, ADP procurement seminars are envisioned to provide training for authorized hospital-level acquisitions. Thereafter, skill levels will be maintained as required by the hospital director. The operator training programs will be designed and administered by the established Regional Education Medical Centers (REMCs) which concern themselves with all forms of medical training in the VA system.

Question 9. Has the quantity of information for DM&S central management been enlarged or reduced in your recent attempt to revise the requirement?

Answer 9. The quantity of information has not been enlarged or reduced. This effort is still in its formative stage, i.e., we have identified a body of information required by DM&S central management but have not as yet compared it to existing data. The purpose of this comparison will be to identify data to be retained, added or eliminated.

Question 10. Were hospital directors asked what information would help them do their jobs? How about other VA health professionals?

Answer 10. As part of the general ADP decentralization effort, VA central management decided to concentrate their efforts on the management information needs of Central Office, the Regional Directors and the Medical District Directors. The reasoning behind this was that we expected that the hospital directors and other VA health care professionals would be asked to contribute directly to the efforts of the Verification and Development Centers (VDCs) prior to the installation of any ADP equipment at their facilities.

Question 11. Can you respond to the problems others have encountered with the limited processing power of mini-computers and the small number of terminals that can be used simultaneously?

Answer 11. Although mini-computers can be considered limited in their processing power the technological changes of recent years make increasingly small computers equivalent to "larger" computers of the past. This trend will continue in the future. At present a mini may out perform older mainframes and micro-computers will out perform older mini-computers. The low cost, ease of use and installation makes this a valuable option.

In addition, computers of various sizes and types can be linked together, each computer being optimized for different functions, with the user unaware of which computer is being reused. The distributed management of hospitals is well suited to this type of distributed computer service.

Our approach has been to study the medical and hospital environment, that is, the functional bases of systems, prior to committing ourselves to a computer type. We find that mini-computers are adequate for many needs.

We are using computer languages and development techniques that are well suited to the clinical environment. Our experience suggests that this is a major factor in reducing the problems encountered with hospital systems.

Given expanded capabilities and reduced cost of computing, we believe that the terminal access is not a major concern.

Question 12. Have you consulted with vendors about how they usually advise such large clients as the VA hospital to get started?

Answer 12. We have been involved in informal consultation with vendors, have evaluated commercial systems, talked to users of commercial packages, discussed approaches with vendors that vendors or VA hospitals might take and observed the market penetration of vendors for many years.

Question 13. How many technologically proficient VA employees who were expected to work on automating DM&S before the decision to decentralize are now being left out of the process?

Answer 13. Since the Administrator's Executive Order was signed on February 18, 1982, technologically proficient VA employees are continuing to support the automation needs of DM&S and are therefore still being included in the process.

Question 14. Are you working on their transfer into DM&S along with the personnel office?

Answer 14. At this time, it is not intended to transfer any of these technologically proficient employees into DM&S. However, as the plan for medical ADP evolves, there may be selected transfers.

Question 15. What role will telecommunications play in the implementation of the new ADP system?

Answer 15. At this point in the development of the medical ADP plan, it has not been determined as to what the full role of telecommunications will be. It is now being used to support the computer processing for the Pharmacy system in District #17 and is intended to support the remote processing of expansion of Pharmacy to other selected sites. Additionally, it is envisioned that some form of telecommunications may be used to transmit selected management data from the VAMCs to higher level management.

RESPONSE OF THE VETERANS' ADMINISTRATION TO WRITTEN QUESTIONS SUBMITTED BY HON. ALAN CRANSTON, RANKING MINORITY MEMBER OF THE SENATE COMMITTEE ON VETERANS' AFFAIRS

Question 1. Please provide for the record when it is completed, Dr. Custis' outline of Central Office needs for information from the field.

Answer 1. We will provide this outline when it is completed.

Question 2. When the "decentralization" plan is implemented in Phase I, II, and III medical centers, what relation will the mini- and the micro-computers in individual hospitals bear to AMIS?

Answer 2. DM&S management information will be derived, to the greatest extent possible, as a by-product of the hospital-based ADP systems. While we will continue to process the AMIS workloads at the Austin DPC, the standardized CORE software will generate much of the required AMIS input for the Phase I, II and III medical centers. As a part of the ongoing effort to streamline management reporting, DM&S (MIRMO) will be working closely with the Office of the Controller to consolidate and improve those centralized systems, such as AMIS, which receive DM&S data for management reports and statistical analyses.

Question 3. Certain concerns over the capabilities of both hardware and software which will provide ADP capability for certain clinical functions have been raised in conjunction with the proposed "decentralized" system.

Given that the field will be requested by Central Office for certain data for central management needs, what system design throughout the country will allow this data to be transmitted to Central Office?

Answer 3. There will be data element standardization among various development activities to insure compatibility and potential for system integration. Also data will be available for ad hoc and statistical questions. We have not as yet structured a summary level clinical requirement for a system design which could be employed throughout the country.

Question 4A. Please explain the different functions to be served by your present planning for the new "decentralized" ADP approach and the planning in which the Department of Medicine and Surgery had been engaged under OMB Circular A-109.

Answer 4A. The medical center functions to be served by our current approach are the same as those addressed in previous efforts -- Patient Registration, Admissions/Discharge/Transfers (ADT), Clinic Scheduling, Pharmacy, and Clinical Laboratory. It is the process by which these functions will be implemented that has changed as a result of the decentralization decision. Our present strategy does incorporate the essential components of needs identification, exploration of alternative solutions, and evaluation of pilot implementations consistent with the A-109 process.

Question 4B(i). Dr. Custis, to what extent do you believe that the A-109 process is inconsistent with your new ADP approach and to what extent would compliance with A-109 delay or frustrate, in whole or in part, achievement of the goals of the new approach?

Answer 4B(i) The prior planning effort emphasized a large centrally oriented systems approach in which VA Medical Centers would have identical systems. The new decentralized approach recognizes that each Medical Center has different needs and a single system may not apply to all Medical Centers. The new approach will allow Medical Centers to consider a much broader range of alternatives and obtain systems that are more responsive to local needs.

The new approach is in our opinion more consistent with the spirit and intent of OMB Circular A-109 in that it provides for consideration of a much broader range of alternatives. The VA has also taken additional steps to comply with the spirit and intent of OMB Circular A-109. A single Program Manager (Mr. Cooper) has been placed in charge of the entire effort and the Administrator's office is being kept apprised of the project on a more frequent basis. The current decentralized approach is also more consistent with A-109 in that it provides for greater competition. Certainly the A-109 process has a high probability of extending the implementation schedule.

Question 4B(ii). Dr. Custis, could you please explain how and when the decision to require DM&S compliance with A-109 was made previously, who made that decision, what OMB's role and view were then and now regarding A-109 compliance, and what your role and view were then and now?

Answer 4B(ii). The final decision regarding the relationship of the A-109 process to the DM&S long range plan has not yet been determined. This decision, reserved for the Administrator, will be made prior to September 30.

We feel it is inappropriate for us to provide OMB views on our previous program directions and recommend that you contact OMB directly.

Question 5.

In the National Academy of Sciences 1977 Study of Health Care for American Veterans, the committee noted that "(i)mproved staff and other resource allocation within hospitals and among hospitals requires access to patient-care data not now available." The Committee also recommended "that the Administrator of Veterans Affairs make the Department of Medicine and Surgery responsible for designing and operating a management information system that would meet the program planning, accounting, and management needs both of the hospitals and the DM&S Central Office." The VA concurred in this recommendation based upon its "recognition that the Department of Medicine and Surgery needs an integrated management information system to discharge properly services for all eligible veterans." The VA further stated that "(s)uch an integrated system can freely exchange information from one computer system to another; therefore, it is consistent with an Agency-wide Management Information System that will ultimately be necessary for the VA."

To what extent do you still agree with the NAS recommendations and observations concerning management information, and how will the needs highlighted by the NAS be met under the new "decentralized" approach?

Answer 5. Yes, we still agree with the NAS recommendations. We recognize the need for MIS and intend to exchange data between computers. The "how" of this question is presently under study. We will exchange data only when need justifies the cost.

Question 6A. On page 10 of your testimony, you describe plans for establishing six regional Verification and Development Centers and equipping them with staff, resources, and operating directives.

How many FTEE will be provided each center?

Answer 6A. Each VDC will be provided with four (4) FTEE.

Question 6B. Please define the "resources" mentioned and how much of them will be available to each VDC.

Answer 6B. "Resources" in this context refers primarily to the equipment which will be either purchased or shipped from other VA facilities to the Verification and Development Centers. Current plans involve hardware purchases to upgrade existing

CPUs and to acquire new CPUs and a number of CRTs and miscellaneous peripheral devices. Licenses for supporting system software will also be purchased. The total FY '82 expenditure for these V&D Center "resources" is estimated at \$1.7 million.

Question 6C. Please provide a copy of the operating directives when available.

Answer 6C. Operating directives are under draft revision and are expected to be available September 30. A copy will be provided at that time.

Question 7. It seems that a function very important to the "decentralized" medical ADP system will be the exchange of information, software, and expertise in order to avoid parallel development of software and facilitate the implementation and customizing of medical ADP in individual hospitals.

Will the VDC's role include acting as such a clearinghouse?

Answer 7. Yes, the VDC's will play an important role in clearinghouse functions. As described in initial drafts of the new policy directives, local development efforts will be closely monitored by VDC personnel and coordinated through the MIRMO to assure that there will be no duplication of software development. The software verification process will take place at the VDCs. Once a software package has been certified, VDC personnel will work with MIRMO in making available programs and supporting documentation for sharing with other medical centers.

Question 8A. Will some customizing be necessary in automating such functions as Admissions, Discharge, and Transfer, Pharmacy, or Clinical Laboratory, in order for the available software to meet the needs of individual hospitals? Please explain the basis of your answer.

Answer 8A. Available software will perform common functions at each medical center with tailoring required only to accommodate differences in medical center facility configurations. Ward and clinic designations, for example, will differ as will the scope of various programs within the medical centers.

Question 8B. Will hospital directors overseeing such automation be able to hire an ADP expert or computer programmer to customize available software, and what additional FTEE and recruitment assistance will be provided for this purpose?

Answer 8B. We are in the process of determining staffing needs and policies in regards to decentralization. Hospital directors will be permitted to obtain technical skills and resources where needed through the normal budgetary and review process.

Question 8C. Would VDC personnel be likely to be available to provide such customizing services?

Answer 8C. Yes, along with ODM&T, MIRMO and hospital personnel.

Question 9A. On page six of your testimony you refer to an administrative process you envision for planning and budgeting.

What level of detail will this require from an individual hospital in terms of i) the type of language to be used, ii) the type of program being sought, iii) the functions to be automated, and iv) other areas?

Answer 9A. We have established the MIRMO for initial submission of DM&S ADP budget and planning requirements. The draft policy statement when approved will establish the level of detail required. It is anticipated that each hospital will be able to proceed on applications development and system acquisition in accordance with policy and procedures currently being reworked with existing DM&S budget and planning processes to support the decentralized plan.

Question 9B(i). Will the pertinent VDC be involved in this process?

Answer 9B(i). Yes.

Question 9B(ii). (If so) In what capacity and at what point in the process will this VDC be consulted?

Answer 9B(ii). They will provide planning and budgetary data for those areas under their scope of activity.

Question 9C. How, if at all, does this process deviate from that outlined at the April 7 ADP meeting in Washington, at which time it was indicated that individual hospital directors would have fairly wide discretion in planning for their medical ADP needs?

Answer 9C. It does not substantially differ from the April 7 meeting. As the program plan evolves, we will be in a better position of evaluating the ultimate extent of any deviation from the April 7 ADP meetings.

Question 10A. Will the Medical Information Resources Manager (MIRM) oversee the VDC's, or will this be the responsibility of the ADP task force under the Deputy Administrator?

Answer 10A. The MIRM will oversee the VDCs.

Question 10B. Is the Program Management Task Force (PMTF) referred to in your testimony the same entity as the ADP task force which reports to the Deputy Administrator?

Answer 10B. No. The ADP Task Force which reported to the Deputy Administrator was set up to examine medical ADP requirements which resulted in the formation of the PMTF and MIRM.

Question 10C. When will the PMTF be integrated into the Medical Information Resources Management?

Answer 10C. The PMTF task force functions will be integrated into the MIRM in September 82.

Question 10D(i). Once the PMTF is so integrated, will the personnel from the PMTF then report to the MIRM?

Answer 10D(i). Members of the PMTF are VA personnel temporarily assigned to support this effort. Once the PMTF functions have been integrated into the MIRM, task force members will return to their permanent duty stations.

Question 10D(ii). What will Dr. Dickie's role be between now and then and thereafter?

Answer 10D(ii). Dr. Dickie will continue in his PMTF leadership role until the task force functions are integrated into MIRM in September 1982. At that time, he will return to his previous duties as Chief, Systems Development Division at the Washington Medical Center but will be available to the Chief Medical Director in an advisory role during the continued implementation of the decentralization effort.

Question 10E. What will the role of the ODM&T be in the implementation of ADP capability in DM&S?

Answer 10E. A current effort is underway to refine our policy and responsibilities which will specifically delineate ODM&T's role.

Question 11A. On page 10 of your testimony, you mention the firm of Deloitte, Haskins and Sells (Deloitte). What functions are Deloitte contracted to perform at present (please provide a copy of the contract)?

Answer 11A. Presently, Deloitte is contracted to perform the following functions:

- Identify the health care information capabilities needed by the VA;
 - Identify operational VA ADP systems for development/upgrade/implementation;
 - Provide a methodology for evaluating these systems based on cost-effectiveness;
 - Evaluate the vendor system capabilities;
 - Establish a demonstration design for validating the findings of the vendor evaluation process;
 - Establish a mechanism for monitoring the demonstrations and assuring their validity.
- A copy of the contract is forwarded herewith.

[Excerpts from the VA's contract with Deloitte, Haskins, and Sells follow:]

SOLICITATION, OFFER AND AWARD

8 CERTIFIED FOR NATIONAL DEFENSE UNDER DPM REG. 1 AND/OR DPM REG. 2

4 PAGE 1 OF 45

1 CONTRACT (Proc. and Award) NO	2 SOLICITATION NO RFP 101-16-81 ☐ ADVERTISED OFFER ☒ NEGOTIATED OFFER	3 DATE ISSUED 6/16/81	4 REQUISITION/PURCHASE REQUEST NO Memo 3/9/81 (10)
7 ISSUED BY Veterans Administration Office of Supply Services (93) 810 Vermont Ave., NW Washington, DC 20420		6 ADDRESS OFFER TO (if other than block 7)	

In advertised procurement offer and offeror shall be construed to mean bid and offer.

SOLICITATION

9 Sealed offers in original and 4 copies for furnishing the supplies or services in the Schedule will be received at the place specified in block 8, or if handwritten, in the depository located in Block 7 Address, Room 760 until 3:30 P.M. local time 7-15-81

If this is an advertised solicitation, offers will be publicly opened at that time.

CAUTION - LATE OFFERS: See pars. 7 and 8 of Solicitation Instructions and Conditions.

All offers are subject to the following:

1. The Solicitation Instructions and Conditions, SF 33-A, 1-7th edition which is attached or incorporated herein by reference.
2. The General Provisions, SF 32, 4/75 edition, which is attached or incorporated herein by reference.
3. The Schedule included herein and/or attached hereto.
4. Such other provisions, representations, certifications, and specifications as are attached or incorporated herein by reference. (Attachments are listed in schedule.)

FOR INFORMATION CALL (Name & telephone no.) (No collect calls): MR. CHARLES L. GARRIS (202) 369-3125/3860

SCHEDULE

10 ITEM NO	11 SUPPLIES SERVICES	12 QUANTITY	13 UNIT	14 UNIT PRICE	15 AMOUNT
	A CONSULTANT STUDY TO DETERMINE THE MOST COST-EFFECTIVE MEDICAL INFORMATION SYSTEM PRE-BID CONFERENCE, SEE PAGE 7.				

See continuation of schedule on page 4

OFFER (pages 2 and 3 must also be fully completed by offeror)

In compliance with the above, the undersigned agrees, if this offer is accepted within 30 calendar days (60 calendar days unless otherwise specified) from the date for receipt of offers specified above, to furnish any or all items upon which prices are offered at the price set opposite each item, delivered at the designated point(s), within the time specified in the schedule.

16. DISCOUNT FOR PROMPT PAYMENT (See par. 8, SF 33-A)

17. OFFEROR	CODE	FACILITY CODE	18 NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print)
NAME AND ADDRESS (Street, city, county, State and ZIP code)			19 SIGNATURE
AREA CODE AND TELEPHONE NO.			20 OFFER DATE

☐ Check if residence address is different from above - enter such address in Separate

AWARD (To be completed by Government)

21 ACCEPTED AS TO ITEMS NUMBERED "MARKED "A"	22 AMOUNT	23 ACCOUNTING AND APPROPRIATION DATA FY 81 MX02
24 SUBMIT INVOICES (4 copies unless otherwise specified) TO ADDRESS SHOWN IN BLOCK	25 NEGOTIATED PURCHASE TO	26 U.S.C. 2304(c) (1) 41 U.S.C. 252(c) (1) RFP 1-3.210(A) (13)
26 ADMINISTERED BY (If other than block 7)	27 PAYMENT WILL BE MADE BY Veterans Administration Fiscal Service 810 Vermont Ave., NW Washington, DC 20420	28 UNITED STATES OF AMERICA BY (Signature of contracting officer)
29 NAME OF CONTRACTING OFFICER (Type or print) CHARLES L. GARRIS	30 AWARD DATE	

Award will be made on this form, or on Standard Form 28, or by other official written notice

INTEGRATED AND FUNCTIONAL HEALTH CARE INFORMATION SYSTEMS

CURRENT ENVIRONMENT AND STATEMENT OF WORK

1. **Background.** The Department of Medicine and Surgery (DM&S) of the United States Veterans Administration operates 172 VA Medical Centers (VAMCs) throughout the continental United States and one in the Commonwealth of Puerto Rico. These medical centers serve the total medical needs of eligible veterans. In addition, DM&S maintains a number of outpatient clinics in heavily populated areas to handle medical needs of veterans whose domicile is, in general, more than 50 miles from a medical center, as well as nursing homes and domiciliaries.

The VA is the largest single system provider of health care in the United States. It operates 172 VAMCs, 49 satellite or independent outpatient clinics, 92 Nursing Home Care units as part of VAMCs, and 16 Domiciliaries. The total bed capacity of the health care system is in excess of 105,000 beds of all kinds. The health care budget for the VA in Fiscal Year 1980 was \$6.4 billion. Over 1.4 million out of 30 million veterans received treatment on an inpatient basis in FY 1980. Also, during the year there were over 17 million outpatient medical visits and 225,000 dental outpatient visits recorded. This care is delivered mainly in VA facilities.

A large proportion of the treated veterans have low income, and are single, widowers, or divorced. According to one survey, only one-third of the users under age 65 have some form of health insurance.

The VA serves a predominantly adult male population, often with multiple disabilities and problems, and with defined social and economic characteristics. Less than 30% of the three million veterans served by the VA have service-connected disabilities. Current eligibility laws make any veteran with non-service-connected disabilities, who states that he cannot afford medical care, eligible for medical care in the VA system on a space-available basis.

2. **Overview.** The ability of the Veterans Administration to continue its health care mission depends on the development of effective communications and processing capabilities to support quality patient care, medical research, and the education of health professionals. A number of factors have increased the demands of the 172 VAMCs, 49 satellite or independent outpatient clinics, 92 Nursing Homes, and 16 Domiciliaries. These factors include increased patient use of facilities, new emphasis on cost control and management efficiency, new medical procedures and techniques, and new standards and review procedures. These demands require the Veterans Administration to investigate the application of new computer and communications technologies to the health care delivery decision making needs of the Veterans Administration.

The Computerized Medical Systems Office (CMSO) is charged with the responsibility of planning the VA DM&S direct patient care delivery system at both the facility and system levels. The CMSO has established ongoing communications and liaison with the VA Office of Data Management and Telecommunications (ODM&T) and serves as the manager for DM&S in its necessary interface with ODM&T. Personnel in DM&S and ODM&T work jointly on all efforts concerned with computer applications.

The approach to this task will be to identify successful systems providing the delivery of direct patient care services in the private and public sectors, select specific functional and integrated systems for demonstration at VA facilities, and finally, after analyzing alternatives, install VA-wide solutions for the improved delivery of direct patient care services.

3. SCOPE OF WORK

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The Contractor shall, on a full-time basis, develop a plan and strategy for the VA to determine which of the currently operational functional (such as patient scheduling) or integrated (which combines functional applications into a hospital-wide system) technologies would be most cost-effective and of maximum value to the agency's medical center network.

The plan and strategy must be set forth in a manner such that the VA program will utilize currently operating VA medical center systems and currently operating private sector systems. It must provide for the analysis of various alternatives before VA-wide solutions are installed and must include suitably engineered testing and validation methods. It must ensure that the network-wide implications of pursuing functional and/or integrated solutions will be properly documented and reviewed by Central Office and hospital-based management. The schedule for testing the functional and integrated solutions will be developed by the Contractor working closely with the DM&S staff.

The strategy and plan will include: methodologies for technology selection, cost effectiveness/maximum value criteria definition, the selection of functional and integrated systems for demonstration, a methodology to evaluate the demonstrations, methodologies to analyze alternative technologies, engineered testing and validation methods, a mechanism to obtain Central Office and hospital-based management review of technologies, scheduling, and management reporting.

To accomplish the Scope of Work, the Contractor will perform the following tasks:

- o Task 1 - Indoctrination and Planning: Before doing any work on the other tasks shown below, the Project Team shall conduct a thorough review of background materials, learn project and documentation standards, and prepare a project schedule.

Sub-Task 1.1 - Indoctrination

The project team will be briefed on the background and objectives of the Integrated and Functional Health Care Information Systems Project. Previous work by contractors and by VA personnel will be discussed. The VA has established a framework for the examination of private sector health care delivery systems to determine their applicability to VA requirements. This framework identifies functional areas and units in VA health care facilities which require automated support. It also contains classifications of VA Health Care Facilities (HCFs) that are relevant to the selection and examination of private sector systems.

The Contractor's staff will be thoroughly indoctrinated with the project documentation standards required by the agency. These standards will be confirmed with during the project. In addition, the Contractor's staff must establish the necessary working relationships with officials in DMS and those internal and external organizations requiring communications and liaison.

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There are four organizational levels in the existing VA health care delivery framework to be considered when VA-wide solutions are developed:

Level 1: Health Care Facility (HCF). The requirements of patient care dictate that the capabilities in each HCF respond to the highest priority, namely, the patient care needs of the patient in that HCF. The timely availability of information and support for clinical decisions involving patients must be as rapid as needed for high-quality patient care.

The information processing capabilities should also relate the HCF management decision support needs to the data derived from clinical care functions, and permit the HCF to function as a complex, yet unified, entity, relating patient administrative support capabilities to patient care, and providing for the distribution of administrative costs to specific patient and clinical functions to meet present and anticipated future reporting requirements.

Level 2: Medical District. The Medical Districts are typically consortiums of five to ten HCF's. District management requires information on HCF workload, costs and resources. A goal is to improve short and long range planning. Each HCF must provide information to its District and there may be intercommunication between HCF's within a District and, at a different level, between Districts.

Level 3: Medical Region. The Medical Regions are typically consortiums of five to six Districts. Regional management requires District information to coordinate resource distribution to optimize health care delivery. Each District must provide information to its Region.

Level 4: Central Office. The Central Office receives information from each HCF, District, and Region to guide district, regional, and national health care delivery efforts. This information is necessary for the distribution of resources to Regions, Districts and HCF's and to properly perform short-and-long term planning. The Central Office needs relevant and timely data to make key policy decisions.

- Sub-Task 1.2 - Planning

The Project Team Leader will prepare a project plan. Key events and milestones as well as project deliverables will be shown together with principal interdependencies between events and the project's critical path. The plan will be developed in a manner that permits it to be easily maintained and updated during the duration of the project.

• **Task 2 - Development of Integrated and Functional Health Care Information Systems Strategy:** The Contractor, working with the appropriate officials in DM&S, will develop a strategy which will form the basis for the selection of available, currently operating functional or integrated technologies that are most cost-effective and of maximum value to the VA. The strategy will provide the means to measure accomplishments and consider contingencies as the program progresses. At program initiation, it is neither possible nor desirable to address all considerations in detail. It is possible and desirable, however, to examine and schedule when decisions on each consideration can and must be made throughout the selection process and to refine the strategy and planning as the program proceeds.

- **Sub-Task 2.1 - Strategy and Plan for Functional Technology Selection**

The Contractor working with the appropriate DM&S officials will define a strategy and plan to identify and determine which functional technologies currently operating as VA medical center systems or currently operating as private sector systems should be evaluated relative to their cost-effectiveness and value to the VA medical center network. This evaluation will include consideration of the degree of difficulty and time required to install private sector systems in the VA and/or to expand/convert VA systems.

The Contractor must also, working with the appropriate officials in DM&S, prioritize functional areas to focus attention on the most important applications. The following functional areas are applicable to VA medical centers:

- General Management
- Cost Accounting and Budgeting
- Records Maintenance
- Admissions
- Dietetics
- Pharmacy
- Patient Information Recording and Communications
- Ambulatory Care Services
- Operating Room Support
- Computerized Medical History Applications
- Radiology
- Radiation Therapy
- Nuclear Medicine
- Dental Service/Dental Laboratory
- Laboratory/Pathology Service

- o Nursing Services
- o Mental Health Services/Counseling
- o Rehabilitation
- o Nursing Home
- o Domiciliary

The Contractor will recommend functional systems of both VA and vendors for site visit and evaluation. The project team will collect data regarding each of the selected systems through documentation review, site visit demonstrations, and user interviews.

Using documentation review criteria, the Contractor will analyze the functional and technical documentation for each of the VA and vendor systems to determine the applicability of the system and if the system should be further studied through on-site demonstration and collection of user interview data. The system documentation shall consist of both vendor-supplied materials and those obtained from user locations.

The Contractor will collect descriptive information which identifies vendor capacity to install, train and support systems and shall provide a detailed description of each of the vendor organization capabilities, and financial strength.

The project team will conduct a series of system user site visits and demonstrations to collect detailed information about the operation, performance and support of systems which have been selected through detailed analysis of system documentation. Site visit data shall include results of observation of system demonstrations, review of operating and technical performance characteristics and user interviews. General instruments used for data collection will be adapted for each user location providing data collection flexibility within a uniform format.

Sub-Task 2.2 - Strategy and Plan for Integrated Technology Selection

The Contractor working with all appropriate officials in DM&S will define a strategy and plan to identify and determine which integrated technologies, which combine functional applications into hospital-wide systems, currently operating as VA medical center systems or currently operating private sector systems, should be evaluated relative to their cost-effectiveness and value to the VA medical network. This evaluation will include consideration of the degree of difficulty and time required to install private sector integrated technologies in the VA, or extend currently available VA integrated systems.

The Contractor will recommend integrated systems of both the VA and vendors for site visit and evaluation. The project team will collect data regarding each of the selected systems through documentation review, site visit demonstrations, and user interviews.

The Contractor will collect descriptive information which identifies vendor capacity to install, train and support systems and shall provide a detailed description of each of the vendor organization capabilities, and financial strength. Using documentation review criteria, the Contractor will analyze the functional and technical documentation for each of the VA and vendor systems to determine the applicability of the system and if the system should be further studied through on-site demonstration and collection of user interview data. The system documentation shall consist of both vendor-supplied materials and those obtained from user locations.

The project team will arrange and conduct a series of system user site visits and demonstrations to collect detailed information about the operation, performance and support of systems which have been selected through detailed analysis of system documentation. Site visit data shall include results of observation of system demonstration, review of operating and technical characteristics and user interviews. General instruments used for data collection will be adapted for each user location providing data collection flexibility within a uniform format.

Sub-Task 2.3 - Cost-Effectiveness/Maximum Value Criteria

The Contractor will work with appropriate officials in DM&S to develop a framework and methodology to determine the cost-effectiveness of the systems being evaluated and their value to the VA's medical center network. The methodology should consider everything that will have to be paid in the future for each alternative as well as every future benefit or achieved objective that will result from each alternative. This includes, to the extent possible, costs in forms other than dollars, especially where they differ between alternatives. It also includes all possible types of benefits, both tangible and intangible, which may occur at any future time during a system's life cycle, including, especially, system effectiveness. The systems must be evaluated in terms of capital investment, difficulty in implementing the systems in the VA, and the time required to implement the systems. The expected life cycle of each system being evaluated must be related to the total life cycle capital investment.

Task 3 - Selection and Implementation of VA-wide Solutions: The Contractor, working with appropriate officials in DM&S, will develop the framework for the selection of functional and integrated systems for demonstration, the evaluation of the demonstrations, and the implementation of VA-wide solutions. An appropriate scheduling and management reporting structure will be developed by the Contractor to coordinate the implementation of VA-wide solutions.

- Sub-Task 3.1 - Methodology for Selection of Functional and Integrated Systems for Demonstration

Based upon the criteria identified in Sub-Task 2.3, specific vendor and/or VA functional and integrated systems will be selected for demonstration. The demonstrations will verify that the chosen systems are sound and will perform successfully in the operational VA environment. The Contractor will document the demonstration test conditions, the performance criteria, and life cycle cost factors that will be used in the evaluation and selection of systems for VA-wide implementation.

- Sub-Task 3.2 - Methodology to Evaluate Demonstrations

The Contractor will develop a methodology to evaluate the demonstrations of the functional and integrated systems. This methodology will consider system performance during the demonstration as measured against VA performance criteria, and the management and technical capabilities of private sector firms offering systems. This methodology will include a method to properly document the results of the demonstrations.

- Sub-Task 3.3 - Methodology to Analyze Alternatives Before Installing VA-wide Solutions

The Contractor will develop a methodology to analyze the alternative functional or integrated technologies identified in previous Sub-Tasks prior to installing VA-wide solutions. The analysis and quantifications of the alternative design concepts will include the analysis and quantification of system performance requirements and the establishment of management and program decision thresholds.

The Contractor will, using the previously refined criteria, analyze and evaluate the potential for transferring appropriate private sector systems in whole or in part to the VA, and for extending current VA systems to additional VAMCs. The systems recommended for potential transfer and use within the VA and will identify strong points and weaknesses according to pre-established criteria.

- Sub-Task 3.4 - Engineered Testing and Validation Methods

The Contractor will develop suitably engineered testing and validation methods to validate selected functional or integrated technologies. These methods will test and validate each selected technology to verify its operating worth by independent evaluation prior to its implementation as a VA-wide solution.

- Sub-Task 3.5 - Review of Network-Wide Implication of Functional and Integrated Solutions by Central Office and Hospital-Based Management

The Contractor will define a mechanism to ensure that the network-wide implications of pursuing functional and integrated solutions will be properly documented and reviewed by Central Office and hospital-based management. An organizing framework along with supporting methodology procedures will be developed to establish an effective working relationship with these management groups. The framework and methodology must facilitate a close rapport between Contractor, Central Office and hospital-based management that facilitates the review of network-wide implications of the technologies by VA management. This review mechanism will minimize the possibility of network incompatibilities as VA-wide solutions are implemented.

- Sub-Task 3.6 - Scheduling

The Contractor will develop a schedule for the selection, testing, validation, and implementation of functional or integrated technologies using network planning techniques (CPM/PERT).

- Sub-Task 3.7 - Management Reporting

A reporting structure will be developed to provide VA management with the ability to review and assess the status of the integrated and functional health care information systems selection, testing, and validation and implementation process. VA management should be able to assess solution, implementation, cost, schedule, and performance against predictions, and provide such assessments for consideration by the agency head at key decision points.

Task 4 - Technical Assistance in Implementing Demonstrations

The Contractor will provide technical assistance to the VA staff during the implementation of functional and integrated system demonstrations. These demonstrations will be conducted in accordance with the cost conditions and performance criteria defined in Task 3. The objective of the live demonstrations is to determine the ability of the selected systems to perform in the operational VA environments.

Sub-Task 4.1 - Adapt to VA Operational Environments

The Contractor will assist the VA staff in the preparation of necessary materials to adapt the selected functional and integrated systems in the VA operational environment. This may involve some modifications to the systems selected to tailor them for VA patient care.

Sub-Task 4.2 - Site Preparation

The Contractor will assist the VA staff with the preparation of the sites for both functional and integrated demonstrations. This will include determination of appropriate locations for the system's components and the communications to tie the components together.

Sub-Task 4.3 - User Orientation and Training

The Contractor will work with the VA staff to coordinate and conduct user orientation and training for both functional and integrated demonstration sites. This training will include training sessions for both technical and non-technical VA user personnel and both live system operational instructional as well as formal classroom training.

Task 5 - Technical Assistance in Evaluating Demonstrations

The Contractor will provide technical assistance to the VA staff during the evaluation of functional and integrated system demonstrations. These demonstrations will be conducted in accordance with the test conditions and performance criteria defined in Task 3. The objective of the live demonstrations is to determine the ability of the selected systems to perform in the operational VA environment.

Sub-Task 5.1 - Benchmark/Acceptance Test Materials and Documentation

The Contractor will assist the VA staff with the preparation of benchmark/acceptance test materials and with the documentation of benchmark/acceptance test results. Benchmark/acceptance tests are conducted on selected systems to validate their capability to process designated workloads. They are used to demonstrate both system and functional capabilities and permit the calculation of system and functional capabilities and permit the calculation of system capacities within specific workload volume, time, and cost constraints.

Sub-Task 5.2 - Evaluation of Benchmark/Acceptance Test Results

The results of the benchmark/acceptance tests will indicate whether or not a system is performing in accordance with its written functional and technical specifications. The Contractor will assist the VA staff in evaluating the performance of the demonstration equipment and software. Test results will be matched to pre-defined system performance criteria.

Sub-Task 5.3 - Review of System Documentation

The Contractor will assist the VA staff with the review and evaluation of the completeness and accuracy of the documentation supplied with the demonstration systems. This documentation should accurately

describe the functional capabilities and technical characteristics of the equipment and software. The documentation must be reliable, understandable, and maintainable.

Sub-Task 5.4 - Briefings on Demonstration Results for Central Office and Hospital-Based Management

The results of the demonstrations will be presented to the central office and hospital-based management. The Contractor will assist the VA staff with the preparation of visual and written material for these briefings. These briefings provide Central Office and hospital-based management with an opportunity to review and discuss the results and implications of the demonstration tests.

Task 6 - Technical Assistance for Implementing VA-Wide Solutions

The Contractor will provide technical assistance to the VA staff during the implementation of VA-wide solutions. The methodology to analyze alternative functional or integrated technologies defined in Task 3 and the results of the demonstration tests will permit the VA to select VA-wide solutions for implementation. A major objective of this task is to minimize the possibility of network incompatibilities as VA-wide solutions are implemented.

Sub-Task 6.1 - Implementation Plan for VA-Wide Solutions

After the VA staff has selected VA-wide solutions, the Contractor will assist the VA in the completion of an Implementation Plan. This plan is necessary to coordinate with users the sequence of events necessary to install the selected systems. The plan will indicate the systems to be delivered by specific user sites, VA organizational requirements, and a schedule of user orientation and training sessions.

Sub-Task 6.2 - User Acceptance Tests

As systems are implemented on a VA-wide basis, each site will conduct an acceptance test of the equipment and software that has been delivered. The Contractor will work with the VA staff to develop acceptance test criteria and installation schedules and also communicate to VA users the nature and extent of the tests necessary to implement the systems.

Sub-Task 6.3 - User Orientation and Training

The Contractor will work with the VA staff to coordinate and conduct user orientation and training sessions as VA-wide solutions are implemented. This training will include training sessions for both technical and non-technical VA user personnel and both live system operation instruction as well as formal classroom training.

Sub-Task 6.4 - Briefings on Implementation Results for Central Office and Hospital-Based Management

The results of the implementation of VA-wide solutions will be presented to Central Office and hospital-based management. The Contractor will assist the VA staff in the preparation of materials for these briefings. These briefings permit Central Office and hospital-based management to review and discuss the status of implementation activities.

4. DELIVERABLES

The Contractor shall make all deliverables available in accordance with the following format:

<u>Task Number</u>	<u>Interval Months</u>		<u>Delivery Interval</u>	
	<u>Begin</u>	<u>End</u>	<u>Earliest Date</u>	<u>Latest Date</u>

The deliverables anticipated from each task are outlined below. These deliverables are considered minimal and are not intended to restrict the Contractor's outputs from each task. The Contractor should indicate any additional deliverables on a task by task basis which they have found to be advantageous to the Government in projects of this nature.

- Task 1 - Deliverables: The Task 1 deliverables will consist of but not necessarily be limited to:
 - Fully indoctrinated team familiar with the integrated and functional health care information systems project policies and standards.
 - Project plan and schedule.
- Task 2 - Deliverables: The Task 2 deliverables will consist of, but not necessarily be limited to:
 - Strategy and plan for functional technology selection.
 - Strategy and plan for integrated technology selection.
 - Documented cost-effectiveness/maximum value criteria.
- Task 3 - Deliverables: The Task 3 deliverables will consist of, but not necessarily be limited to:
 - Selection of functional and integrated systems for demonstration on basis of criteria for demonstration
 - Methodology to evaluate demonstrations
 - Methodology to analyze alternatives before installing VA-wide solutions.

- Engineered testing and validation methods.
- Mechanism for review of network-wide implications of functional and integrated solutions by central office and hospital-based management.
- Selection testing, validation, and implementation schedule with network planning techniques (CPM/PERT)
- A management reporting structure to permit VA management to monitor the integrated and functional health care delivery system selection, testing, validation, and implementation process.

5. CONTRACTOR SUPPORT

The VA considers the volumes (hours) and services (Labor categories), as stated below, are sufficient (on a task by task basis) to accomplish the tasks as outlined above. The proposing Contractors shall not consider the VA's estimates to be minimums to qualify for award. They are presented only to assist the Contractors in preparing their proposals. The offeror is reminded that this is provided only to assist the offeror.

The technical proposal shall reflect those categories and hours the Contractor considers sufficient to complete the job on or ahead of schedule. However, if the Contractor proposes different volumes and/or services, the technical proposal shall include an explanation and rationale of the deviation and why the change is in the best interest of the Government.

<u>Task</u>	<u>Project Manager</u>	<u>Senior Analyst</u>	<u>Analyst</u>	<u>Total</u>
1	80	160	120	360
2	700	2800	2800	6300
3	<u>780</u>	<u>3120</u>	<u>3120</u>	<u>7020</u>
TOTALS	1560	6080	6040	13680

6. PERSONNEL REQUIREMENTS

a. The Project Manager must have the following experience:

- The qualifications as specified in the GSA Basic Agreement for the D0001, Project Manager, category.
- A minimum of ten years professional information systems experience, at least four of which involved project team leadership.

- A minimum of five years experience with information systems in the organization and management of health care delivery, including multiple facility health care delivery systems.
 - A minimum of five years experience with general medical application information systems.
 - A minimum of two years experience with health professions education applications.
 - A minimum of five years experience with cost finding methodologies and financial management systems in health care delivery.
 - A minimum of five years experience designing and documenting new information systems in accordance with Federal Information Processing Standards Publication (FIPS PUB 38) (or similar) design and documentation standards.
- b. The Senior Analysts must have the following experience:
- The qualifications as specified in the GSA Basic Agreement for the D0002, System Analyst, category.
 - At least four years professional information systems experience.
 - A minimum of three years experience designing and documenting new information systems in accordance with FIPS PUB 38 (or similar) design and documentation standards.
- c. The Analysts must have the following experience:
- The qualifications as specified in the GSA Basic Agreement for the D0006, Analyst, category.

7. PROJECT MANAGEMENT AND ORGANIZATION

a. Monthly Progress Reports: Monthly progress reports must be prepared by the Project Team Leader and be submitted to the Contracting Officer's Technical Representative (COTR) by the fifth of each month covering the previous month's progress. This report will succinctly cover general progress for the month, deliverables from the vendor, items received from VACO, critical problem areas, Contractor recommendations, decisions made, and the revised schedule and milestones. The contractor will submit all reports with covers which display the following information: (See next page)

Monthly Progress Report Cover Sheet Format:

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Progress Report No. _____ . . .

Complete name and business address of the contractor

Contract number

Dollar amount of award (including modifications)

Type of award, i.e., competitive or noncompetitive

Identification of the official who requested the consulting services,
including the name of the organization and telephone number

u. Monthly Meetings: The Contractor shall prepare a briefing to be presented to the COTR within one week after the monthly progress report is submitted. The exact date and time for this briefing will be mutually agreed upon between the COTR and the Contractor. The Contractor will have the Project Team Leader, as well as the corporate manager to which the Project Team Leader reports, available at the monthly meetings, if the COTR considers it necessary and desirable.

c. Project Control: The Contractor shall describe how they will manage the project. As a minimum, the Contractor must elucidate how they will handle the following management changes to the Project Team:

- Expanding the Project Team
- Contracting the Project Team
- Use of consultants

d. Project Organization: The Contractor shall show how the proposed Project Team Leader relates to other corporate resources which could conceivably support the project.

e. Project Team: The Contractor shall show the composition of the Project Team that will be assigned to support the project within seven days after contract award if an award is made to the Contractor. All personnel to be assigned to the team must be specifically mentioned by name for Task 1, 2, and 3.

f. Resumes: One resume must be presented for each employee who will be assigned to Task 1, 2, or 3. Additional resumes for personnel that could conceivably be assigned to subsequent tasks or act as consultants may also be included. For all resumes, the Contractor must specifically indicate whether all personnel proposed for work under this RFP are currently employed by the offeror or by a subcontractor or by means of a new company hire.

8. TYPE OF CONTRACT

This solicitation is for a requirements-type fixed price level of effort with task order application.

9. TERM OF CONTRACT

The term of the contract shall be for nine months (9 months) from date of award. The contract term may not be extended without the express written authorization of the Contracting Officer.

10. OPTION TO RENEW

This contract is renewable at the option of the Government, by the Contracting Officer giving written notice of renewal to the Contractor at least 60 days before the contract is to expire. This notice permits the

Contractor to submit a pricing proposal for the next twelve month period, sixty days before this contract is to expire. Such a preliminary notice shall not be deemed to commit the Government to renewals. If the Government exercises this option for renewal, the contract as renewed shall be deemed to include this option provision. However, the total duration of this contract, including the exercise of any options under this clause, shall not exceed 36 months. The Contracting Officer may negotiate a fixed price for additional tasks with the Contractor based upon the VA's estimate of volumes (hours) and services (labor categories) required to accomplish these tasks.

11. PAYMENT SCHEDULE

The Contractor will be paid in accordance with the approved project milestones and deliverables as stated in Paragraph 3. "Scope of Work", Sub-Task 1.2, "Planning". The invoices will cite the contract number and be mailed to:

Veterans Administration
Office of Supply Service (93A)
810 Vermont Ave., N.W.,
Wash., DC 20420

12. CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE

Dr. Lawrence M. Klainer, has been designated as the Contracting Officer's Technical Representative (COTR) for furnishing technical guidance on this solicitation and resultant contract. Mr. Herbert J. Mulqueen is designated as the alternate Contracting Officer's Technical Representative, and as such, may act for the COTR in his absence. The authority and responsibilities of the COTR include:

- a. Monitoring the Contractor's performance to assure compliance with technical requirements of the contract.
- b. Review and approval of progress reports, technical reports, etc., which require Government approval.
- c. Approval of the payment of contractor invoices.
- d. Immediate notification to the Contracting Officer if performance is not proceeding satisfactorily.
- e. Ensuring that changes in work under the contract are not initiated before written authorization or a contract modification is issued by the Contracting Officer.
- f. Providing the Contracting Officer a written request and justification for changes.

- g. Furnishing interpretations relative to the meaning of technical specifications and technical advice relative to Contracting Officer approvals of subcontracts, overtime, travel to general purpose meetings, etc.
- h. Visiting the Contractor's facilities to check performance as authorized by the contract's inspection clause. This may include, but is not limited to, evaluation of the following.
 - (1) Actual performance versus scheduled and reported performance.
 - (2) Changes in technical performance which may affect financial status, personnel or labor difficulties, over-extension of resources, etc.
 - (3) Verify that the number of the employees charged to the contract are actually performing work under the contract.
- i. At the completion of the contract, advise the Contracting Officer concerning the following:
 - (1) All articles and services required to be furnished and/or performed under the contract have been technically accepted.
 - (2) Contractor compliance with patent rights and royalties clauses of the contract.
 - (3) Recommend disposition of any government furnished property in possession of the contractor.
 - (4) Verify proper consumption and use of Government furnished property by the contractor.

The contractor is advised that only the Contracting Officer, acting within the scope of this contract and his authority, has the authority to make changes which affect contract prices, quality, quantities or delivery terms.

13. PROPOSAL EVALUATION

Your Technical and Cost Proposal will be evaluated ONLY on the effort identified in Tasks 1 through 3 (a projected 9 month effort). Tasks 4, 5 and 6, representing possible renewal options for 12, 24 and 36 months, describe in general terms the continued multi-year effort that may follow, pending availability of funds and need of mission.

The overall evaluation will involve awarding 70% of the evaluation points for technical capabilities and 30% of the evaluation points based upon cost considerations for technically capable and responsive proposals.

a. Technical: The technical evaluation will be based upon the following factors, each of which has possible evaluation points shown to indicate the relative importance of the factor:

Project Understanding	35
Technical Approach	15
Project Organization and Staffing	
--Monthly Reports	1
--Project Controls	1
--Project Team and Resumes	10
Corporate Experience	8
	70

b. Costs: Following the technical evaluation, those vendors which are considered technically qualified to support this project will be further evaluated on the basis of their cost proposal. A maximum of 30 evaluation points will be awarded to the lowest cost estimate from a technically qualified vendor. Other technically qualified vendors will receive less than 30 evaluation points. The number of evaluation points awarded will be determined by multiplying 30 times a simple ratio of minimum responsive cost/vendor's cost estimate.

c. Prompt Payment Discount: For the purpose of bid evaluation, any prompt payment discount which is eligible (i.e., for a period of 20 days or more) for consideration in the evaluation of offers pursuant to Article 9(a) of SF 33A will be applied directly to the price offered. Where a single percentage either as a deduction from or an addition to the prices is offered under the price-list method of making awards, such percentage will be applied first to determine the evaluated price offered, then that price will be reduced by any eligible prompt payment discount offered. For the purpose of payment, when the prompt payment discount is earned, the full discount will be deducted, otherwise, any payment discount in excess of 5% will be considered by the Government only as a prompt payment discount of 5% and any percentage in excess of 5% will be considered as a special discount, which the offeror agrees that the Government will be entitled to regardless of when payment is made.

14. PROPOSAL STRUCTURE

In addition to the provisions of Standard form 33A the following guidance is provided:

a. The Technical Proposal and the cost or price breakdown shall be separate and complete in themselves so that evaluation of them may be accomplished concurrently and independently. The Technical Proposal shall be precise, factual and complete, and contain a statement to the effect that the proposal is firm for a period of not less than 90 days after the closing date.

b. Optional Form 50, Contract Pricing Proposal (Attachment 1). This form must be included to support the fixed labor hour rates proposed by indicating the direct labor, overhead, G&A and the profit rates used to arrive at the various rates offered.

c. The Government assumes no liability for disclosure or use of unmarked data and may use/disclose the data for any purpose. Unless restricted, information submitted in response to this request may become subject to disclosure to the public pursuant to the provisions of the Freedom of Information Act (5 U.S.C. 552).

Question 11B. What is the dollar value of Deloitte's current contract?

Answer 11B. \$493,953.00

Question 11C. To what extent will Deloitte be testing and evaluating commercial and in-house software?

Answer 11C. During Phase I of the contract, Deloitte will provide a methodology for evaluating both in-house and commercial systems based on cost-effectiveness and maximum value criteria, considering the advantages and disadvantages of functional versus integrated technologies.

Question 11D. What is the project dollar value of Deloitte's contract in each of the next 3 fiscal years?

Answer 11D. The decision to pursue at any level of effort the Deloitte contract for the outyears has not been made.

Question 11E. What, if any, interactions will Deloitte have with the VDC's?

Answer 11E. Deloitte will work directly with the MIRMO. MIRMO, in turn, has the responsibility for liaison with the VDC's.

Question 11F. In which organizational entity -- DM&S, ODM&T, or other VA unit -- does it report?

Answer 11F. The Contract Officer's Technical Representative (COTR) for Deloitte is MIRMO with ODM&T as the alternate COTR.

Question 11G. What clinical functions will the software systems Deloitte is to evaluate be performing?

Answer 11G. Deloitte will evaluate any or all functions identified -- VA developed or vendor supplied. See details in the attached contract.

Question 11H. Will Deloitte evaluate any currently operating MUMPS-based clinical ADP functions in VAMC's?

Answer 11H. Yes, within the scope of contract.

Question 12. Who will carry out the cost-benefit study for FY 83 mentioned on page 10 of your statement?

Answer 12. Under the direction of MIRM, VA will carry out the cost benefit study with support from various components of PP&E, DM&S, ODM&T, Supply and Fiscal.

Question 13. What do you see as the advantages and disadvantages of purchasing and utilizing commercial software packages to perform clinical functions in VAMC's?

Answer 13. The possible advantages include cost savings, reduced development time, and maximum use of private sector resources.

The possible disadvantages include the requirement for specific equipment configurations for each package. In addition, commercial packages may contain proprietary software that may not be easily modified at a local level. The use of existing commercial packages requires some conformity by the user (the hospitals) to methodologies inherent with each package.

Question 14. When will the design for the first phase of the implementation plan for the next 12 months be completed?

Answer 14. The plan will be completed in July 1982.

Question 15. Extensive references were made to "CORE" systems and applications at the ADP conference at VAMC Washington April 7.

Question 15A. I can't help but wonder whether the CORE is what's left over when a user has finished with APPLES.

Question 15B. Is CORE an acronym and if so for what does it stand?

Question 15C. Exactly what clinical functions will be included in the CORE?

Answer 15A, B, C. Core is not an acronym. The descriptive term "core" serves to identify some basic hospital functions including ADTS, Clinical Lab, and Pharmacy functions.

Question 15D. Will the CORE components in individual medical centers use the same language and/or same program to perform their respective functions?

Answer 15D. The CORE components which consist of the Admissions, Discharges, Transfers, Scheduling, Clinical Labs, and Pharmacy functions, for Phase I will be primarily programmed in ANSI standard MUMPS language. The programs will be the same among all the medical centers except for any minor modifications to items like tables and files. These modifications will be made to accommodate specific requirements of each hospital such as ward locations, laboratory locations, etc.

Question 16. In your answers to written questions at the House Subcommittee on Oversight and Investigations hearing on March 24, you indicated that an inventory of hardware in VA medical centers was underway and that this inventory would be completed April 18.

Question 16A. Please provide the results of this inventory for the record.

Answer 16A. The preliminary results of the inventory have been received from all VAMC's. We are validating the list against the supply officer's list at each hospital to insure that minor systems have not been overlooked. On June 30, it will be made available.

Question 16B. What percentage of the components identified in this inventory are compatible with each other?

Answer 16B. That determination will be made as part of the certification that is now being accomplished.

Question 16C. What percentage of the components are:

Question 16C(i). currently being used and at what capacity?

Answer 16C(i). Please see Q.16.A.

Question 16C(ii). are actually in operable condition?

Answer 16C(ii). The inventory to be provided will consist of only operable ADP equipment. As a follow-on, all inoperable equipment will be excessed or repaired. The majority of unused equipment is being shifted to the Phase I effort. We will include a list of the reprogrammed equipment with the inventory on June 30.

Question 16C(iii). Do you plan to devote to medical ADP under the decentralized plan?

Answer 16C(iii). We plan to devote 100% to medical ADP processing including related management information.

Question 17. What is the meaning of the phrase "functionally equivalent software" as used on page 11 of your testimony? Please provide some examples.

Answer 17. All CORE software implemented at the medical centers, regardless of tailoring for local variations, will provide the same functionality. For example, a pharmacy located in a medical center which supports a drug dependency treatment program may provide special reports reflecting methadone maintenance activities. This special function will, however, be an add-on to the basic pharmacy package which runs at every other medical center supporting common operational requirements and gathering identical management information data.

Question 18A. Will any procurements of either hardware or software be made at the local level?

Answer 18A. Presently we are establishing specific dollar thresholds, below which medical centers may locally procure ADP equipment or software. Central Office approval of ADP plans submitted by the medical centers will insure the consolidation of common requirements to capitalize on opportunities for savings from bulk purchases.

Question 18B. (If so) Under what circumstances will that occur?

Answer 18B. At the present time we are revising agency regulations. Once planning and procurement policies are in place which will comply with existing Federal Procurement Policy Management Regulations, we anticipate that hospitals may initiate procurement actions in their areas of responsibility.

Question 18C. Please provide a copy of the procurement strategy being developed by the Office of Procurement and Supply at the earliest possible date.

Answer 18C. A copy of the procurement strategy is under review and will be provided by the end of September.

Question 19. On page 8 of your testimony, reference is made to VACO funding needs for FY 82 (\$5 million and FY 83 (\$11 million) in connection with medical ADP under the new "decentralized" plan.

Question 19A(i). Do these amounts refer to funding needs at VACO or to field needs which will be funded from Central Office or both?

Answer 19A(i). They refer to the field needs.

Question 19A(ii). If both, what is the projected breakdown between the two purposes each year?

Answer 19A(ii). No answer required.

Question 19B(i). From what appropriation account will this \$5 million needed in FY 82 come?

Answer 19B(i). Funds will be provided from equipment budgeted in Medical Care.

Question 19B(ii). Do you plan to submit a reprogramming notice for this purpose?

Answer 19B(ii). No.

Question 19C. From what appropriation account will this \$11 million be transferred, and will a reprogramming notice be submitted?

Answer 19C. The \$11 million was budgeted for ADP equipment purchases in the Medical Care 1983 Congressional Budget request. No reprogramming notice will be submitted.

Question 19D. Which phase(s) of the planned program will be covered by the FY 83 funding of \$11 million?

Answer 19D. Phase II.

Question 20. On page 9 of your testimony, you refer to expansion of "Advanced Pharmacy."

Question 20A(i). Is this a reference to "enhanced APPLES?"

Question 20A(ii). (If not) To what does it refer?

Question 20A(iii). Dr. Custis refers to expansion of "enhanced pharmacy" in his remarks. Is "enhanced pharmacy" the same as "enhanced APPLES?"

Answer A(i), (ii), (iii). There is no "enhanced APPLES." The term "Advanced Pharmacy" was used incorrectly in testimony. The reference should have been to "Enhanced Pharmacy." There are three different pharmacy systems which may be described as follows:

APPLES - The outpatient pharmacy system based at the Los Angeles DPC supporting District 26. The system runs on Honeywell computers and is being phased out.

Advanced Pharmacy - Essentially a conversion of APPLES with enhancements which is based at the Hines DPC running on a DEC VAX computer. This system supports all outpatient pharmacies in District 17.

Enhanced Pharmacy - This system is an expansion of the Advanced Pharmacy. It supports both inpatients and outpatients and includes inventory control functions as well. This system is based at the Hines DPC, runs on a DEC VAX computer and is currently being pilot tested at the Hines medical center for future expansion to the field.

Question 20B. In the Administrator's Executive Order of February 18, it was stated that "(t)here is to be no further development or expansion of the APPLES pharmacy system." However, on page 9 of your statement you note that you "are considering the possible expansion of this (Advanced Pharmacy) service," and Dr. Custis noted in his statement that he felt it was "prudent and necessary to continue with enhanced pharmacy."

Question 20B(i). If "Advanced Pharmacy," "Enhanced Pharmacy" and "enhanced APPLES" mean generally the same thing, would you please elaborate on the reasons for the apparent departure from the policy on APPLES outlined in the Executive Order?

Answer 20B(i). "Advanced Pharmacy", "enhanced Pharmacy", and "enhanced APPLES" are not the same thing. APPLES is a much older and limited application package and is being phased out. Advanced Pharmacy is a production outpatient application package currently operating in Medical District 17. Please see also the answer to Q.20.A(iii).

Question 20B(ii). In any event, how does the expansion you are referring to fit into the overall "decentralization" effort?

Answer 20B(ii). Medical Center directors will have the option to select the Enhanced Pharmacy application. The Enhanced Pharmacy System will provide the Medical Center directors with another option in addition to the MUMPS pharmacy system being piloted in Phase I of our decentralization effort and the use of commercial packages to be evaluated with the use of Deloitte, Haskins and Sells.

Question 20B(iii). Do you have a timetable for such an expansion, and if so, please provide it for the record.

Answer 20B(iii). We have no firm timetables at this time but will provide one by June 30.

Question 20B(iv). To how many medical centers do you plan to expand this "enhanced" or "Advanced" pharmacy?

Answer 20B(iv). The proposed schedule calls for the implementation in FY '83 of the Enhanced Pharmacy System at approximately 21 medical centers or outpatient centers. It will be carefully reviewed during the next few months.

Question 20C. What are the estimated life-cycle costs for "enhanced APPLES" and for a MUMPS-based pharmacy system in comparable VA medical centers?

Answer 20C. The life cycle costs for "Enhanced Pharmacy (defined in answer to Q.20.A(iii)) and the MUMPS based pharmacy under Phase I of our decentralized effort will be evaluated in the FY 83-84 timeframe to assist the Medical Center Directors and VACO in determining the desired automation path for the remainder of the 172 hospitals.

Question 21. Dr. Custis, would you please comment on the difference between VA and DOD health-care needs and facilities in so far as planning and use of ADP is concerned, drawing on your personal experiences in and out of each system?

Answer 21. There is basic similarity between ADP requirements for DOD health care facilities (TRIMIS) and those of the VA DM&S. In this respect, we have much to learn from TRIMIS experience and its current programming toward decentralized minicomputer procurement for individually-tailored hospital use.

One difference which may develop in the future is the possible need for individual cost billing for third-party reimbursement. This will probably never be required of the military hospital, but may in the future be congressionally-directed for the VA.

There are, of course, minor differences in data requirements, but functional ADP system similarity is not impacted.

Question 22. Please respond specifically to each of GSA's five recommendations to the VA which the GSA witness outlined in his statement, explaining whether you concur, and reservations you may have, and any plans to implement each of these recommendations.

Answer 22. We feel that we concur completely with the spirit as well as the specifics of the GSA recommendations. As indicated in Commissioner Carr's testimony, his recommendations were offered in the spirit of improving the ADP program management control process in the VA. That objective certainly underlies all our Administration is trying to do in our ADP initiatives. As for the specific recommendations, we feel that our medical program plans directly address the five features that Commissioner Carr offered:

(1) We are formulating our program on a long-range mission need basis, allowing as much flexibility in management and implementation at the user level as can be maintained consistent with basic federal ADP procurement regulations (Recommendation 1);

(2) we are moving, through reorganization and realignment of all information management resources within the Department of Medicine and Surgery (DM&S) to strengthen the program oversight process (Recommendation 2); we have acquired an individual of proven experience and stature in the ADP field, Mr. Roger Cooper, to assume the leadership of this DM&S reorganization (Recommendation 4); and

(3) we are designing our medical ADP program to take full advantage in its early phases of all available systems opportunities, in-house and commercial, with the expectation that through subsequent pilot systems evaluation programs, final system selections can be made on the basis of demonstrated performance and benefit (Recommendation 5).

(4) Mr. Jim Iannuzzi has been designated the VA chairperson to establish the ADP advisory committee (Recommendation 3).

Chairman SIMPSON. I will proceed with some questions. I am pleased to hear your testimony, Chuck, that your approach to the whole ADP issue has been refocused, and now seems to address many of the concerns that I had that have been communicated to you by the staff of the Veterans' Affairs Committee of the Senate.

I am very much a strong supporter of your efforts to implement a comprehensive, distributed, automated data-processing operation within the VA. And in my 3½ years with the committee, I have seen how that has just floated along in a not very appropriate fashion.

So I guess that I want to clarify some things for myself, and I have some questions. A major concern, I think, that I have is about this phrase planning. Because everything seems to sink into the swamp around here when we talk about planning. At least that is my experience.

It is marvelous to hear various groups and agencies talk about planning. It is fascinating, absolutely fascinating. And it sounds so impressive. But we have a word for it in Wyoming. Anyway all of the witnesses will be discussing views about the necessary planning process.

At this time, could you please describe for the record and for the committee, too, the goals for the automated data system within 1, 5, or 10 years, can you tell us what goals might be within those timetables, since we are talking about planning and conjecture, and here is a chance to do some more of that.

Mr. HAGEL. Well, let me, Mr. Chairman, set a general broad overview, big picture answer to that, and then I would very much like to ask Dr. Custis, as the Chief Medical Director, to comment.

The aims and goals of the proposed ADP policy for DM&S are centered around basically better health-care services for veterans. Within that there is a management structure that oversees that, and information services are part of that. And I think that we spell that out in some detail in the proposed testimony.

But our primary focus was to try and develop computer capacity, ADP system policy, within our medical centers to help those medical center directors, help those "hands-on" professionals, the doctors out there, the nurses, to bring better health care to veterans.

Within that, as I said, Dr. Custis and whoever follows Dr. Custis in the next 5 to 10 years, will need better and more current information. That is a very integral part of the decision and the aim that we have in establishing this policy. I think that that generally sets the tone, Mr. Chairman, as to why we have made the decision that we made. And with that, I would ask Dr. Custis to amplify and explain further.

Dr. CUSTIS. I suppose that my response would go something like this, Mr. Chairman. Automation and its application to clinical services is a very dynamic thing. The systems available today do not begin to resemble what was available 5 and 10 years ago previously.

And I think that the same thing is true as regarding the future. It was one of our concerns at that time that we were directed down the path of HCIS and the VA under the guidance of OMB circular A-8109. In that process, it was obvious that we were being asked to

plan today for something that would have fruition 10 years down the road, and that we would see nothing in the way of ADP online and onboard ADP capability in the 1980's.

And it was because of this that the concept of "the interim solution," you may recall, was introduced. The difficulty was that the interim solution remained a tightly centralized program effort. And I see the big difference between the decentralized concept for which the Administrator is now providing guidance and the old interim solution is that this is going to be indeed user oriented. That it is a concept which will, while keeping all options open, place in the hands of our clinicians who have this need in the very near future the hardware and the software to do their own development, and get into operation pharmacy, laboratory, and the several systems that have long since been proven to be cost effective and practical.

I have no doubt that 5 years from now the availability of automated hardware may be entirely different. And 10 years from now, what we put out today may be completely obsolete. I think that it is important to bear that in mind.

Dr. Dickie might want to respond to the same question, Mr. Chairman.

Dr. DICKIE. Dr. Custis has stated very admirably the goal of what we are doing and why we are taking this approach. We have two major users in the VA; the health providers in the medical centers, and the people who provide us the wherewithal to do this in the central office and the oversight groups.

We have to provide both of those as users with the information that they need to properly guide the VA in where they are going. The part that we have been concentrating on in the very near past, and for myself and some others a few years before that, is what can we do to provide the people who actually give the care to the patient with the data needs that will support them in their effort?

I think that the other people, who will be speaking today, can speak very well of the difficulties that we have had in trying to get this going. We have discovered some ways that we will get the process going very quickly for some of these things.

As Dr. Custis implied, we do not have all of the answers. Because as we go along, the process and the opportunities are changing. We cannot wait until we have the perfect solution, because there will never be a perfect solution.

What we have been concentrating on in the last couple of months is to put in place the management operations that will allow the user to get what they need as they go, and at that same time we can meet all of the rules and regulations for budget, procurement, and planning that we need that has to rise to the top of the agency.

Chairman SIMPSON. I understand that Frank Carr from the GSA, who is here this morning, met with you, Chuck, and you discussed the recommendations that he will be presenting today.

Would you tell us specifically to what extent you might concur in the GSA recommendations, how they might affect your initial efforts to implement what you describe as phase 1 of the ADP plan?

Mr. HAGEL. I have not seen the final version of the response from Administrator Carr to Chairman Brooks, so I will speak to

the conversations that I have had with Mr. Carr. Generally the VA would support and agree with the recommendations that the GSA has made to us, trying to be as helpful as possible to insure that we have met all of the regulatory and procurement guidelines, so that we are in compliance with the Federal Paperwork Reduction Act, and all of the processes that are necessary to comply with in order to develop a solid and workable procurement system for this new decentralized policy.

Those recommendations that Frank Carr made were discussed at great length with our professionals within the VA, with the DM&S, ODM&T, and our procurement people, and legal counsel, and others. And generally we are in agreement with the recommendations.

Chairman SIMPSON. I would like to ask about the sharing of information. I know that you had hospital directors from the east coast who were briefed last month. In those participations and the sharing of presentation of policy, were Dr. Custis and Jack Sharkey involved in this procedure, were they involved from the beginning, and will they be involved in the future? I would like that information.

Mr. HAGEL. Well, first of all, Mr. Chairman, Dr. Custis has been given the responsibility by the Administrator to administer this program. It is Dr. Custis' program. As far as Jack Sharkey is concerned in ODM&T, they have a very integral role in helping develop this system, because all of the ADP technical expertise really rests within Sharkey's system.

That includes standardization, certification, help in writing a program plan. So they are very much a part of this, and will remain a part of it. As far as the other elements of the VA, Mr. Chairman, Clyde Cook's procurement operation, John Murphy's legal counsel services, the Office of Program Planning and Evaluation, Ray Blunt's operation, Connie Hoffman's budget office, are all very much a part.

We have to have them as a part. Because as I said in my brief statement, we are dealing with so many interconnecting parts to this, that we really cannot make a move unless we are all together in the same direction and we have agreement.

I can tell you that it was no small accomplishment to write 13 pages of testimony for this hearing this morning, and have everybody in the room representing about 15 offices to agree on that testimony. So at this point, I am satisfied that we are off to a good start with the kinds of support that we are going to have within the agency. And I would be very happy to have Dr. Custis or Jack Sharkey to comment on that further.

Chairman SIMPSON. Do you have any comment, briefly?

Dr. CUSTIS. I think again that your question invites reference to whether there will be an ultimate program director. That is exactly the position description that has been written for the new medical information resource manager who will indeed be the program director of DM&S's ADP.

A news release has not been made on this yet. But the individual in question is Mr. Roger Cooper, who now is the assistant director for retirement programs, OPM. He will be on board with DM&S on May 24.

Chairman SIMPSON. I will be interested to see what his qualifications and background are. I think that the committee will want to.

Dr. CUSTIS. He has a very impressive set of qualifications. I would be happy to furnish them for the record, Mr. Chairman.

Chairman SIMPSON. If you would, that would be helpful.

[Subsequently, the Veterans' Administration submitted the following information:]

Personal Qualifications Statement

Read first before completing form

Form Approved:
O.M.S. No. 50-80357

1. Kind or position (job) you are filing for (for title and number of announcement) DMS SES E-16				DO NOT WRITE IN THIS BLOCK FOR USE OF EXAMINING OFFICE ONLY Material Returned RECEIVED DEC 28 1964																															
2. Options for which you wish to be considered (if listed in the announcement)																																			
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7. Name (Last, First, Middle) COOPER, Roger M. Street address or R.F.D. no. (include apartment no., if any) 4629 S. 31ST RD A-1 City: Arlington, State: Va., ZIP Code: 22206				ANNOUNCEMENT NO. STATEMENT NO.																															
8. Birthplace (City & State, or foreign country) Scottsbluff, Nebraska																																			
9. Birth date (Month, day, year) 2-25-43		10. Social Security Number 560-54-9926		THIS SPACE FOR USE OF APPOINTING OFFICER ONLY Preference has been verified through proof that the operation was under honorable conditions, and other proof as required. ☐ 5-Point ☐ 10-Point Compensable Disab. ☐ 10-Point Other Signature and title _____ Date _____																															
11. If you have ever been employed by the Federal Government as a civilian, give your highest grade, classification series, and job title. Asst. Dir. for Retirement Prog., ES-3 Dates of service in that grade (Month, day, and year) From July '79 to current																																			
12. If you currently have an application on file with the Civil Service Commission for appointment to a Federal position, (a) list the name of the area office maintaining your application, (b) the position for which you filed, and (if appropriate) (c) the date of your notice of rating, (d) your identification number, and (e) your rating.				13. Lowest pay or grade you will accept. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">PAY</td> <td style="text-align: center;">GRADE</td> </tr> <tr> <td style="text-align: center;">\$ per</td> <td style="text-align: center;">OR SES</td> </tr> </table>		PAY	GRADE	\$ per	OR SES																										
PAY	GRADE																																		
\$ per	OR SES																																		
14. When will you be available for work? (Month and year) immediately																																			
15. Are you available for temporary employment lasting: (Acceptance or refusal of temporary employment will not affect your consideration for permanent appointments.) A. Less than 1 month? ☒ YES ☐ NO B. 1 to 4 months? ☒ YES ☐ NO C. 5 to 12 months? ☒ YES ☐ NO				16. Are you interested in being considered for employment by: A. State and local government agencies? ☒ YES ☐ NO B. Congressional and other public offices? ☒ YES ☐ NO C. Public international organizations? ☒ YES ☐ NO																															
17. Where will you accept a job? A. In the Washington, D.C. Metropolitan area? ☒ YES ☐ NO B. Outside the 50 United States? ☒ YES ☐ NO C. Anyplace in the United States? ☒ YES ☐ NO D. Only in specific locality: _____																																			
18. Indicate your availability for overnight travel: A. Not available for overnight travel ☐ B. 1 to 5 nights per month ☐ C. 6 to 10 nights per month ☐ D. 11 or more nights per month ☒				19. Are you available for part-time positions (fewer than 40 hours per week) offering: A. 20 or fewer hours per week? ☒ YES ☐ NO B. 21 to 31 hours per week? ☒ YES ☐ NO C. 32 to 39 hours per week? ☒ YES ☐ NO																															
20. Veteran Preference. Answer all parts. If a part does not apply to you, answer "NO". A. Have you ever served on active duty in the United States military service? (Exclude tours of active duty for training in Reserves or National Guard) ☒ YES ☐ NO B. Have you ever been discharged from the armed services under other than honorable conditions? (You may omit any such discharge changed to honorable or if "YES", give details in item 21.) ☒ YES ☐ NO C. Do you claim 5 point preference based on active duty in the armed forces? ☒ YES ☐ NO If "YES", you will be required to furnish records to support your claim at the time you are appointed. D. Do you claim 10 point preference? ☐ YES ☒ NO If "YES", check the type of preference claimed and complete and attach Standard Form 15, "Claim for 10 Point Veteran Preference", together with the proof requested in that form. Type of Preference: ☐ Compensable Disability ☐ Non-compensable Disability ☐ Purple Heart Recipient ☐ Spouse ☐ Widower ☐ Mother																																			
21. List dates, branch, and serial number of all active service (enter "N/A" if not applicable). From August, 1964 to July, 1969 To U.S. Navy 681813																																			

Attach Supplemental Sheets or Forms Here

22. A. Special qualifications and skills (skills with machines, patents or inventions, your most important publications do not exceed copies unless requested, your public speaking and publications experience, membership in professional or scientific societies, etc.) See attached sheet											
B. State of license or certificate (print registered nurse, lawyer, radio operator, CPA, etc.) See attached sheet				C. Latest license or certificate Year _____ State or other licensing authority _____		D. Approximate number of words per minute Typing _____ Shorthand _____					
23. A. Did you graduate from high school or will you graduate within the next nine months, or do you have a GED high school equivalency certificate? Yes _____ Month and year _____ No _____ Highest grade completed _____				B. Name and location (city and State) of last high school attended Grover Cleveland High School Reseda, California							
C. Name and location (city, State, and ZIP Code, if known) of college or university (If you expect to graduate within nine months, give MONTH and YEAR you expect to receive your degree.)				Dates Attended From _____ To _____		Years Completed Day _____ Night _____		No. of Credits Completed Semester Hours _____ Quarter Hours _____		Type of Degree (B.A., etc.) (D.E.A.) MBA	Year of Degree 74
Univ. of So. California				1972		now		1		3	
Geo. Washington Univ.				1967		1977				48	
Univ. of Utah				1960		1964				221	
D. Chief undergraduate college subjects				No. of Credits Completed Semester Hours _____ Quarter Hours _____		E. Chief graduate college subjects				No. of Credits Completed Semester Hours _____ Quarter Hours _____	
Mathematics				36		Administration				48	
Naval Science				43		Finance/Accounting				24	
Computer Science				12		Info. Tech./Ops. Research				30	
F. Major field of study at highest level of college work Public Admin./ Business Admin.											
G. Other schools or training (for example, trade, vocational, Armed Forces or business). Give for each the name and location (city, State, and ZIP Code, if known) of school, degree obtained, subjects studied, number of classroom hours of instruction per week, certificate, and any other pertinent data. See attached sheet											
24. Honors, awards, and fellowships received See attached sheet											
25. Languages other than English. List the languages other than English in which you are proficient and indicate your level of proficiency by putting a check mark (✓) in the appropriate column. Candidates for positions requiring conversational ability in a language other than English may be given an interview conducted solely in that language. Describe in item 26 how you gained your language skills and the amount of experience you have had in g. completed 72 hours of classroom training, spoke language at home for 18 years, self-taught, etc.)											
Name of Language(s)	Can Prepare and Deliver Lectures		Can Converse		Have Facility to Translate Articles, Technical Materials, etc.		Can Read Articles, Technical Materials, etc., for Own Use				
	Fluently	With Difficulty	Fluently	Passably	Into English	From English	Fluently	With Difficulty			
26. References. List three persons who are NOT related to you and who have definite knowledge of your qualifications and fitness for the position for which you are applying. Do not repeat names of supervisors listed under item 21. Experience.											
Full Name			Present Business or Home Address (Number, Street, City, State and ZIP Code)				Business or Occupation				
Ken Barry			FTS 934-2440 Social Security Administration				Chief, Telecommunications				
Bruce Baggeley			Peat, Marwick, & Mitchell, NY Office				CPA, Partner in firm				
Ed Schroer			Office of Personnel Mgt. (202-632-4606)				Director, Off. of Planning and Evaluation				

	YES	NO
1. I have been involved in at least one sexual relationship with someone other than my spouse.	☐	☐
2. I have ever had sex with anyone other than my spouse.	☐	☐
3. I have ever had sex with anyone other than my spouse while married.	☐	☐
4. I have ever had sex with anyone other than my spouse while living with my spouse.	☐	☐
5. I have ever had sex with anyone other than my spouse while dating him/her.	☐	☐
6. I have ever had sex with anyone other than my spouse while engaged to him/her.	☐	☐
7. I have ever had sex with anyone other than my spouse while living with him/her.	☐	☐
8. I have ever had sex with anyone other than my spouse while attending college or university.	☐	☐
9. I have ever had sex with anyone other than my spouse while working.	☐	☐
10. I have ever had sex with anyone other than my spouse while traveling.	☐	☐
11. I have ever had sex with anyone other than my spouse while drinking alcohol.	☐	☐
12. I have ever had sex with anyone other than my spouse while under the influence of drugs.	☐	☐
13. I have ever had sex with anyone other than my spouse while feeling lonely.	☐	☐
14. I have ever had sex with anyone other than my spouse while feeling bored.	☐	☐
15. I have ever had sex with anyone other than my spouse while feeling stressed.	☐	☐
16. I have ever had sex with anyone other than my spouse while feeling sad.	☐	☐
17. I have ever had sex with anyone other than my spouse while feeling angry.	☐	☐
18. I have ever had sex with anyone other than my spouse while feeling insecure.	☐	☐
19. I have ever had sex with anyone other than my spouse while feeling jealous.	☐	☐
20. I have ever had sex with anyone other than my spouse while feeling guilty.	☐	☐
21. I have ever had sex with anyone other than my spouse while feeling ashamed.	☐	☐
22. I have ever had sex with anyone other than my spouse while feeling embarrassed.	☐	☐
23. I have ever had sex with anyone other than my spouse while feeling nervous.	☐	☐
24. I have ever had sex with anyone other than my spouse while feeling anxious.	☐	☐
25. I have ever had sex with anyone other than my spouse while feeling depressed.	☐	☐
26. I have ever had sex with anyone other than my spouse while feeling hopeless.	☐	☐
27. I have ever had sex with anyone other than my spouse while feeling helpless.	☐	☐
28. I have ever had sex with anyone other than my spouse while feeling worthless.	☐	☐
29. I have ever had sex with anyone other than my spouse while feeling unloved.	☐	☐
30. I have ever had sex with anyone other than my spouse while feeling unwanted.	☐	☐
31. I have ever had sex with anyone other than my spouse while feeling unappreciated.	☐	☐
32. I have ever had sex with anyone other than my spouse while feeling misunderstood.	☐	☐
33. I have ever had sex with anyone other than my spouse while feeling isolated.	☐	☐
34. I have ever had sex with anyone other than my spouse while feeling alienated.	☐	☐
35. I have ever had sex with anyone other than my spouse while feeling rejected.	☐	☐
36. I have ever had sex with anyone other than my spouse while feeling abandoned.	☐	☐
37. I have ever had sex with anyone other than my spouse while feeling betrayed.	☐	☐
38. I have ever had sex with anyone other than my spouse while feeling deceived.	☐	☐
39. I have ever had sex with anyone other than my spouse while feeling lied to.	☐	☐
40. I have ever had sex with anyone other than my spouse while feeling manipulated.	☐	☐
41. I have ever had sex with anyone other than my spouse while feeling controlled.	☐	☐
42. I have ever had sex with anyone other than my spouse while feeling oppressed.	☐	☐
43. I have ever had sex with anyone other than my spouse while feeling persecuted.	☐	☐
44. I have ever had sex with anyone other than my spouse while feeling threatened.	☐	☐
45. I have ever had sex with anyone other than my spouse while feeling endangered.	☐	☐
46. I have ever had sex with anyone other than my spouse while feeling unsafe.	☐	☐
47. I have ever had sex with anyone other than my spouse while feeling vulnerable.	☐	☐
48. I have ever had sex with anyone other than my spouse while feeling exposed.	☐	☐
49. I have ever had sex with anyone other than my spouse while feeling humiliated.	☐	☐
50. I have ever had sex with anyone other than my spouse while feeling disgraced.	☐	☐
51. I have ever had sex with anyone other than my spouse while feeling dishonored.	☐	☐
52. I have ever had sex with anyone other than my spouse while feeling insulted.	☐	☐
53. I have ever had sex with anyone other than my spouse while feeling offended.	☐	☐
54. I have ever had sex with anyone other than my spouse while feeling resentful.	☐	☐
55. I have ever had sex with anyone other than my spouse while feeling bitter.	☐	☐
56. I have ever had sex with anyone other than my spouse while feeling spiteful.	☐	☐
57. I have ever had sex with anyone other than my spouse while feeling vindictive.	☐	☐
58. I have ever had sex with anyone other than my spouse while feeling malicious.	☐	☐
59. I have ever had sex with anyone other than my spouse while feeling cruel.	☐	☐
60. I have ever had sex with anyone other than my spouse while feeling hateful.	☐	☐
61. I have ever had sex with anyone other than my spouse while feeling envious.	☐	☐
62. I have ever had sex with anyone other than my spouse while feeling jealous.	☐	☐
63. I have ever had sex with anyone other than my spouse while feeling greedy.	☐	☐
64. I have ever had sex with anyone other than my spouse while feeling selfish.	☐	☐
65. I have ever had sex with anyone other than my spouse while feeling arrogant.	☐	☐
66. I have ever had sex with anyone other than my spouse while feeling conceited.	☐	☐
67. I have ever had sex with anyone other than my spouse while feeling vain.	☐	☐
68. I have ever had sex with anyone other than my spouse while feeling proud.	☐	☐
69. I have ever had sex with anyone other than my spouse while feeling smug.	☐	☐
70. I have ever had sex with anyone other than my spouse while feeling superior.	☐	☐
71. I have ever had sex with anyone other than my spouse while feeling inferior.	☐	☐
72. I have ever had sex with anyone other than my spouse while feeling inadequate.	☐	☐
73. I have ever had sex with anyone other than my spouse while feeling incompetent.	☐	☐
74. I have ever had sex with anyone other than my spouse while feeling incapable.	☐	☐
75. I have ever had sex with anyone other than my spouse while feeling clumsy.	☐	☐
76. I have ever had sex with anyone other than my spouse while feeling awkward.	☐	☐
77. I have ever had sex with anyone other than my spouse while feeling shy.	☐	☐
78. I have ever had sex with anyone other than my spouse while feeling reserved.	☐	☐
79. I have ever had sex with anyone other than my spouse while feeling distant.	☐	☐
80. I have ever had sex with anyone other than my spouse while feeling cold.	☐	☐
81. I have ever had sex with anyone other than my spouse while feeling aloof.	☐	

7. Are you a citizen of the United States?

10. "DOB" give country of which you are a citizen.

NOTE: A conviction or a finding does not necessarily mean you cannot be act joined. The nature of the conviction or finding and how long ago it occurred is important. Give all the facts so that a decision can be made.

☐ Within the last five years have you been fired from any job for any reason?

29 Within the last five years have you lost a job after being notified that you would be fired?

29 Within the last five years have you quit a job after being notified that you would be laid? ☐ YES ☐ NO
If your answer is YES or NO above it, YES, give details in item 36. Show the name and address, including ZIP Code, of employer, approximate date, and reasons in each case. This information should agree with your answers in item 21. Experience

30 A Have you ever been convicted, forfeited collateral, or are you now under charges for any felony or any firearms or explosives offense against the law? (A felony is defined as any offense punishable by imprisonment for a term exceeding one year, but does not include any offense classified as a misdemeanor under the laws of a State and punishable by a term of

During the past seven years have you been convicted, imprisoned, on probation or parole or forfeited collateral, or are you now under charges for any offense against the law not included in A. above?

NOTE: When answering A and B above, you may omit (1) traffic fines for which you paid a fine of \$50.00 or less; (2) any offense committed before your 18th birthday which was a felony adjudicated in a juvenile court or under a youth offender law; (3) any conviction the record of which has been expunged under Federal or State law; and (4) any conviction set aside under the Federal Youth Corrections Act or similar State authority.

36. While in the military service were you ever convicted by a general court-martial?
If your answer to 30A, 30B, or 31 is "YES", give details in item 36. Show for each offense (1) date, (2) charges, (3) place, (4) court, and (5) action taken.

32. Does the United States Government employ in a civilian capacity or as a member of the Armed Forces any relative of yours (by blood or marriage)? (See items 31 and 33 in the attached instructions about 1)

39. Do you live with, or within the past 12 months have you lived with, any of these relatives who are employed in a civilian capacity?

If your answer to 32 is "YES", give in item 35 for such relatives: (1) name, (2) present address (including ZIP Code), (3) relationship, (4) department, agency, or branch of the armed forces.

If your answer to 3D is "YES", also give the kind of appointment held by the relative(s) you live with or have lived with within the past 12 months.

34. Do you receive, or do you have pending, application for retirement or retiree pay pension, or other compensation based upon military, Federal civilian, or District of Columbia Government service?

If your answer to 34 is "YES", give details on Item 35

Your Statement cannot be processed until you have answered all questions, including Items 27 through 34 above. Be sure you have placed an "X" to the left of EVERY marker (4) above, either in the "YES" or "NO" column.

Item Number	Space for detailed answers. Indicate item number to which the answers apply.
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ATTENTION — THIS STATEMENT MUST BE SIGNED

Read the following paragraphs carefully before signing this Statement.

A false answer to any question in this Statement may be grounds for not employing you, or for dismissing you after you begin work, and may be punishable by fine or imprisonment (U.S. Code, Title 18, Section 1001). All the information you give will be considered in reviewing your Statement.

AUTHORITY FOR RELEASE OF INFORMATION

I have completed this Statement with the knowledge and understanding that any or all items contained herein may be subject to investigation prescribed by law or Presidential directive and I consent to the release of information concerning my capacity and fitness by employers, educational institutions, law enforcement agencies, and other individuals and agencies, to duly accredited investigators, Personnel Staffing Specialists, and other authorized employees of the Federal Government for this purpose.

CERTIFICATION

I certify that all of the statements made by me are true, complete, and correct to the best of my knowledge and belief, and are made in good faith.

SIGNATURE (sign in ink)

DATE _____

12/25/01

Memberships

American Society of Public Administration (ASPA)
Data Processing Management Association (DPMA)
Association for Computing Machinery (ACM)
Fairlington Community Association

Former member of the Joint Federal Task Force for Data Link Control
Procedures and Message Formats

Licenses and Certificates

Certified Data Processor (CDP) 1970
U.S. Coast Guard Ocean Operator Auxiliary Sail License
Commercial/Instrument Pilots License
Federal Communications Commission (FCC) Licenses:
-Marine Radiotelephone Operator
-Amateur Operator Extra Class
-Third Class Radiotelegraph

Publications and Public Speaking

"Upgrading Federal Computers Throught Existing Systems" - Government Executive, August, 1979, pp. 42-48.

"Improving Outdated Systems in the Government"- American Institute of Industrial Engineers (AIIE), Federal ADP Procurement Conference Proceedings, 1978.

"Organizing ADP Projects"-National Bureau of Standards, Federal Interagency Committee on ADP.

"Organization of ADP Software Development"-Institute of Electrical and Electronic Engineers (IEEE), COMPSAC78

Who's Who in the South and Southwest- 1978-79 edition

Who's Who in the East- 1981-82 edition

Education/Teaching

Lecturer on management, ADP, and telecommunications at the University of the District of Columbia

Doctoral candidate in public administration at the University of Southern Calif.,
all course work completed, working on dissertation

24.

1960-64 Full undergraduate scholarship (NROTC) to the University of Utah
1976 Special Citation of Official Commendation and Praise, U.S. Civil Service Commission
1976 Outstanding Performance Evaluation, U.S. Civil Service Commission
1980 Outstanding Performance Evaluation, U.S. Office of Personnel Management
1981 Outstanding " " " " " "

Outline of Career Progression

7/79 - present Assistant Director for Retirement Programs
U.S. Office of Personnel Management (OPM)
 Washington, D.C.

4/77 - 7/79 Director, Office of Automated Systems Development
U.S. Office of Personnel Management

9/75 - 4/77 Chief, Information Technology Division
U.S. Civil Service Commission

4/75 - 9/75 Chief, Teleprocessing Section
U.S. Civil Service Commission

11/74- 4/75 Staff Assistant
U.S. Civil Service Commission

6/73 -11/74 Manager, Systems and Programming
Larwin Group, Inc.
 Beverly Hills, Calif.

1/71 - 6/73 Computer Specialist
U.S. Navy
 Port Hueneme, Calif.

7/70 - 1/71 Project Manager
Ducommun Inc.
 Los Angeles, Calif.

8/69 - 7/70 Assistant Head, Data Processing
Deputy Chief of Naval Operations (OP-511F)
 Washington, D.C.

4/67 - 8/69 Head, Systems and Programming Division
Naval Security Station
 Washington, D.C.

5/65 - 4/67 Supply Officer/First Lieutenant
U.S.S Endurance (MSO-435)
 Long Beach, California

8/64 - 5/65 Student Aviator
U.S. Navy, Pensacola, Fla.

6/63 - 8/64 Scientific Programmer
Kennecott Copper Research Center
 Salt Lake City, Utah

Information Technology Courses

<u>Date</u>	<u>Course</u>	<u>Institution</u>
9/63	Logical Design of Digital Systems	Univ. of Utah
9/63	Digital Computer Programming	"
3/67	1401 Autocoder	IBM
5/67	1410 Autocoder	IBM
10/67	Systems Analysis	IBM
1/68	Application of Operations Research	George Washington Univ.
2/68	General Purpose Systems Simulator (GPSS)	IBM
3/68	Simulation and Modeling	IBM
4/68	COBOL-360	IBM
5/68	FORTRAN-360	IBM
6/68	360-ALC	IBM
7/68	Digital Computer Programming Concepts	George Washington Univ.
9/68	Linear Programming	"
1/69	Management Info. Sys. Dev. & Application	"
5/69	OS Language Interface (360)	Dept. of Agriculture
9/69	Theory and Mgt. of Systems	George Washington Univ.
1/70	APL	IBM
3/70	CICS	IBM
8/72	Design & Analysis of Communication based Systems	IBM Adv. Sys. Sci. Inst.
9/72	Design & Analysis of Data Base Systems	"
8/74	Business Computer Systems	Univ. of So. California
9/74	Programming Productivity Technique	IBM Adv. Sys. Sci. Institute
7/75	GCOS Level 66 Utilities & JCL	Honeywell
7/75	General Macro Assembly Programming (GMAR)	"
8/75	GCOS Level 66 System Software	"
9/75	GCOS Level 66 Disk Management	"
4/76	GCOS Level 66 Time Sharing Workshop	"
9/76	Data Base Management	George Washington Univ.
8/78	Data Mgt. IV Concepts	Honeywell
5/79	PASCAL Programming	The American Institute

Management Courses

9/67	Quantitative Factors in Administration	Geo. Washington University
9/68	Advanced Administrative Management	"
9/68	Statistics & Probability as Applied to Management Problems	"
1/69	Human Behavior in Organizations	"
7/69	Organizational Management	"
7/69	Business Research Methods	"
9/69	Relation of Government to Business	"
9/72	Principals of Business Finance	Univ. of So. California
9/72	Accounting Data for Planning & Control	"
1/73	Quantitative Decision Analysis	"
9/73	Management Communication	"
9/73	Legal Environment of Business	"
9/73	Macroeconomic Analysis	"
1/74	Financial Analysis	"
1/74	Marketing Management	"
9/74	Future Business Strategy	"
2/76	Behavioral Factors in Large Organizations	Geo. Washington University
9/77	Self Assessment and Career Planning	Univ. of So. California
7/78	Seminar in Public Administration	"
3/79	Advanced Seminar in Adm. Behavior	"
9/79	Advanced Seminar in Adm. Theory	"
1/80	Seminar in Policy Analysis	"
1/81	Senior Executive Program Session #50	Federal Executive Institute
2/81	Adv. Seminar in Public Personnel Policy	Univ. of So. California
2/81	Adv. Seminar in Public Finance	"

Cooper, Roger M.
SES Career (ES-3)

Assistant Director for Retirement Programs
U.S. Office of Personnel Management (OPM)
Washington, D.C.

7/79 to present

Responsible for managing the Civil Service Retirement System, related health/life insurance programs, medical programs, and the Federal Government disability retirement system. Manage a staff of over 1,000 employees with 700 personnel located in Washington, D.C. and 300 in Boyers, Pa. Specific duties include:

- establishing policies, regulations, and operating procedures for the various programs
- maintain payroll operation disbursing over \$1.1 billion a month to 1.8 million annuitants
- processing 250,000 retirement and disability claims a year
- proposing legislative changes to the Civil Service Retirement System
- testimony before Congress
- maintaining retirement records on all personnel who have worked for the Federal Government (30 million files)
- liaison with other government retirement systems and all Federal Agencies, GAO, OMB, USA and Treasury

Improved service time for processing retirement claims from 8 months to 2 months over the last year, installed major new online computer system which allows staff to respond to the majority of inquiries thru the use of a computer terminal rather than manual processes.

Cooper, Roger M.
GS-301-15

4/77-7/79

Director, Office of Automated Systems Development
U.S. Office of Personnel Management (formerly
the U.S. Civil Service Commission)
Washington, D.C.

Responsible for all ADP systems supporting the Compensation Group programs which include:

- Federal Civil Service Retirement System
- Federal Employee Health Insurance Program
- Federal Employee Life Insurance Program
- Merit Pay System for the Federal Government

Supervised a staff of approximately 100 senior professionals including program analysts, management analysts, systems accountants, systems analysts, computer specialists, and computer programmers and operators.

Successful in creating RFPs and awarding multi-million dollar contracts for software systems and obtaining a state of the art computer system network (IBM 4341, 4331, 8100) with over 250 3270 terminals. Served as the contracting officers representative (COR) on these contracts.

Directed the conversion of all applications software from ALC operation on Spectra 70 and 6 computers to ANSI COBOL operating on the IBM computers.

Hardware included IBM 3031, 4341, 4331, 8100, Honeywell 6680, Spectra 70 and 6, and Four-Phase model 70s,

All major projects were completed on schedule and within budget. They included:

- -On-line display of master records and pay history for 1.8 million annuitants
- On-line check cancellation and control system
- Redesign and reprogramming the rate computation system
- On-line case control/tracking system
- Conversion of all systems from ALC to ANSI COBOL

COOPER, Roger M.

From 9/75 to 4/77
GS-334-15
Supervisory Computer Specialist

CHIEF
INFORMATION TECHNOLOGY DIVISION
Bureau of Personnel Management
Information Systems
U. S. Civil Service Commission
Washington, D.C. and Macon, Georgia

Responsibilities

The Information Technology Division is responsible for technical support of the Commission's ADP efforts and specifically for the two data processing centers described below:

MACON

Honeywell 66/80 2-CPUs, 3.5 megabyte memory
8.1 billion characters disk storage
4,800 - 9,600 bps synchronous
CRTs & RJE's
300-1,200 bps asynchronous terminals
Hewlett Packard 3000 & 2000 computers
Four-Phase computer systems

WASHINGTON, D.C.

Univac SPECTRA 6 and 45
Xerox 1200 computer/ printer

Responsibilities

As Division Chief, responsible for the following subordinate organizations which provide technical support and leadership to the Commission's ADP effort:

1. Software Research and Maintenance Section

Provides all systems programming for the following computer system:
Honeywell 6680 multiprocessor, Spectra 45 and 6, Four-Phase and
Hewlett Packard 3000 minicomputer systems.

2. Teleprocessing Section

Supports a nationwide network utilizing Honeywell 707 RJE's (9600 BPS),
Data-100 RJE (2780 emulation, 2000 BPS) synchronous, clustered
Honeywell 7700 CRTs (4800 BPS), time division multiplexing, dual
6632 FEPs, etc.

3. Hardware Research Section

Provides equipment analysis, simulations, feasibility studies, coordinates maintenance on terminals, configuration management for large scale computer system (6680, Spectra 45 and 6).

4. Audit and Evaluation Section

Analyses and audits ADP systems for conformance to standards, and technical feasibility.

5. StandardsSection

Write and enforce ADP standards for the Commission.

In addition to carrying out these responsibilities I was responsible for planning and implementing the move of the ITD to the Macon, Ga. complex. Responsible for all managements aspects of the relocation, including facilities planning, personnel, etc.

Selected by the Director, BPMIS in November 1976 to undertake and lead a review of BRIOH ADP Systems which led to significant changes in the organization of BRIOH ADP delivery systems.

COOPER, Roger M.

From 4/75 to 9/75
GS-14 step-6
\$31,336

CHIEF, TELEPROCESSING SECTION

U.S. Civil Service Commission
Washington, D.C.

Responsible for the design, implementation, and operational monitoring of the Commission's nationwide teleprocessing network. This network serves 69 area offices and 10 regional offices throughout the continental United States. Network features include:

- Extensive use of time division multiplexors (TDM) operating over 9600BPS lines.
- Redundant front-end processors (FEP) with automatic load switching in the event of a FEP failure.
- Remote batch terminals (9600BPS)
Synchronous, clustered CRTs (poll and select, 4800BPS)
Asynchronous TTY compatible terminals (110, 134.5, 300BPS)
Dedicated voice grade lines, dial-up ports through rotaries/TDMs

This network was designed and implemented from scratch under my leadership. Processors served by this network include:

- Honeywell 6680 MP
- Four Phase RBT, data entry stations
- Honeywell 707 intelligent RBTs
- Data 100 RBTs

As program manager for the Commission's teleprocessing network, analyze, integrate and approve all teleprocessing requirements. Budget, design and implement terminals for the Commission. Represent the Commission to OMB, OIP and GSA for teleprocessing matters.

Establish policies and information requirements for all teleprocessing users regarding traffic analysis, network design, and terminal characteristics.

Member of the Joint Federal Task Group (JFTG) for Data Link Control Procedure and Message Formats which established Federal Standard 1003, "Telecommunications; Bit Oriented Data Link Control Procedures" and works with ANSI in establishing Advanced Data Communication Control Procedures (ADCCP).

Serve as the Commissions representative for the Honeywell Large Scale User's Group (HLSUA).

COOPER, Roger M.

STAFF ASSISTANT

From 11/74 to 4/75
GS-13 step 9
\$27,632

U.S. Civil Service Commission
Washington, D.C.

Assigned as a staff assistant to the Chief, Data Center Operations Division, Bureau of Manpower Information Systems. Duties have included the following:

- .Write the sections of the request for proposal (RFP) for a new computer system pertaining to:
 - teleprocessing workloads
 - batch and interactive workloads
 - telecommunications network design
- .Design and construct a set of benchmark programs to test the equipment proposed by vendors in response to the RFP. Supervise contract personnel in the performance of their assigned programming and analysis tasks.
- .Meet with GSA representatives to discuss the telecommunication plans and requirements for the new Information Technology Center.
- .Interact with Bureau of Management Services personnel to create joint schedules, plans, policies and methodologies for procuring the new computer system and establishing the new Information Technology Center.
- .Write position descriptions to staff the new Information Technology Center.
- .Reviewing and editing the RFP for consistency and to insure that the requirements are technically sound.
- .Analyze excess computer systems proposed by GSA for applicability in the CSC environment.

COOPER, Roger M.

MANAGER OF SYSTEMS AND PROGRAMMING

From 6/73 to 11/74
\$27,500

Larwin Group Inc.
Beverly Hills, Ca.

Responsible for all systems design and computer programming for this \$150 million a year national real estate developer/mortgage banker. Supervise a staff of 12 analysts and programmers using IBM 370-145 DOS/OS-VSI equipment.

Applications include:

General Ledger
Personnel
Financial Modeling
Accounts Payable
Property Management
Inventory Control
Marketing

Languages:

COBOL, BAL, FORTRAN, MKIV

Accomplishments include:

.creation of two large systems for Marketing and Land Inventory using integrated data bases.

.An online personnel/payroll data base that included:

skills inventory
insurance information
position history

.Introduced and instructed the staff in the use of structured programming, the chief programmer concept, HIPO charts, structured walk-thru of programs, and egoless programming. Wrote several COBOL programs using structured techniques for the Personnel System.

Additional responsibilities include:

.conduct feasibility studies for new hardware/software, write contracts.

.write contracts for ADP services and equipment.

.creation of standards for systems design, programming, and documentation.

.design of a teleprocessing network to support interactive programming and internal timesharing.

.cost center manager with full financial responsibilities for planning, budgeting and cost control.

COOPER, Roger M.

From 3/72 to 6/73

GS-12
\$19,462

COMPUTER SPECIALIST

Performance Evaluation Branch
Facilities Systems Office (FACSO)
U.S. Navy
Port Hueneme, California

Responsibilities follow:

.Design, develop, and monitor FACSO's nationwide telecommunications network. Coordinate all technical support efforts of common carriers and hardware manufacturers. Equipment includes 3705 front-end processor, 2741 terminal systems, Data-100 and Univac 9300 RJE systems, and Mohawk off-line systems.

.Conduct audits of existing and proposed ADP systems to determine feasibility of design, adequacy of controls, and adherence to internal standards. Write critiques and opinions on audited systems. Meet with cognizant project managers to discuss results and recommendations of audits.

.Provide consulting services to the MIS Department in the following areas:
-telecommunications systems design
-data base design
-COBOL programming techniques
-PERT, GPSS, linear programming and other quantitative management tools

.Analyze the efficiency of the computer system at FACSO through the use of a hardware monitor, system simulations, and the SMF and HASP accounting data. Make recommendations for changes to other branches in the Data Processing Dept.

.Supervise and train MIS application programmers temporarily assigned to the Performance Evaluation Branch in COBOL source code optimization techniques.

.Select, evaluate, and maintain a representative set of application programs for benchmark purposes.

.Conduct simulation studies for evaluation of major hardware procurement alternatives.

.Conduct research into advanced COBOL programming techniques and publish findings.

.Devise lesson plans and teach classes in Data Processing Introduction and Advanced Cobol Coding Techniques.

Equipment at FACSO includes 360/65, 1M byte memory, 3330 type disk drives running under OS/MVT-HASP

COOPER, Roger M.

1/71 to 3/72

GS-12
\$18,450

COMPUTER SYSTEMS ANALYST

CBC Financial MIS Division
Facilities Systems Office (FACSO)
Port Hueneme, California

Served as the senior systems analyst in the CBC Financial MIS Division. This division manages and supports the following ADP systems:

.Resource Management System (RMS) Accounting	}	200,000 transactions/month
.Allotment Accounting		
.Naval Industrial Fund (NIF) Accounting	}	5,000 personnel
.Payroll Accounting		
.Leave Accounting		
.Personnel Information System		

Responsibilities follow:

.Analyze user ADP service requests and formulate resultant system changes/additions. Promulgate these changes/additions to assigned programmers in terms of program logic modifications, new program designs, testing procedures, etc.

.Estimate resources necessary to complete ADP service requests and provide the user with estimated completion dates.

.Consult with the user on complex ADP service requests to clarify/resolve any problems and explain the approach being used.

.Provide technical assistance and guidance to assigned programmers in terms of core dumps, JCL, programming techniques, etc.

COOPER, Roger M.

From 7-70 To 1-71

PROJECT MANAGER
INFORMATION SYSTEMS DEPARTMENT

\$15,500

Ducommun Inc.
Los Angeles, California

Accepted a position as Senior Information Analyst. Promoted to Project Manager after 5 weeks on the job. Scope of the project included the design and implementation of a management information system for a subsidiary electronics distribution company with sales of over \$50 million a year. Equipment consisted of 360/40; The applications to be integrated included:

- .inventory control incorporating IBM's IMPACT Management System.
- .on-line inquiry and update of inventory files and processing of all paperwork associated with an order from terminals in locations on the West Coast.
- .accounts payable
- .accounts receivable
- .credit reference system

Staff consisted of 3 senior information analysts (all MBA's) and 10 programmers. The majority of the programmers had degrees and all programming was done in PLI. Interfaced and reported daily on the President, Vice-President level within the electronics company. Responsible for all budget/time estimates. Chaired design committee meetings consisting of President, all Vice-Presidents of the electronics company and the Director of Information Systems for the parent company. Gave progress presentations to top level management of the parent company on a monthly basis.

Left because of rejection of time estimates for completion of the project by immediate supervisor (Director of Information Systems). My time estimates proved to be realistic. Excellent recommendations available from Director of Information Systems and President of electronics distributing company.

COOPER, Roger M.

8/69 to 7/70

GS-13
\$16,780

ASSISTANT SECTION HEAD

Data Processing Section
Deputy Chief of Naval Operations
(AIR)
Washington, D.C.

As Assistant Section Head, supervised systems analysts, programmers, computer operators, statisticians and contractor personnel.

Reviewed and approved all ADP programming (COBOL) and design work accomplished for the Deputy Chief of Naval Operations (AIR) by outside vendors and Navy central design agencies.

Served as the Deputy Chief of Naval Operations (AIR) representative on the Chief of Naval Operations Command Management Information System (CNOCOMIS) design team.

Managed and maintained a large accounting system for aircraft supply usage. Teleprocessing was used for all inputs to the system.

Provided an automated PFBS system for aviation inputs to Joint Strategy Operating Plans and Five Year Defense Plan as well as other high level DOD force level plans. Worked closely with other branches in the Chief of Naval Operations in designing an on-line data base for aviation force plans.

Hardware included Univac 1108, 7094, 360/50, 360/20, and Univac 9300.

Personally designed and wrote programs in 360 assembler language to support a simulation of Naval aircraft losses in South East Asia due to familiarity with ALC and simulation technique.

COOPER, Roger M.

4/67 to 8/69

DIVISION HEAD
SYSTEMS & PROGRAMMING DIVISION

LT, U.S. Navy

Data Processing Department
Naval Security Station
Washington, D.C.

Directed all computer systems design and programming for the Naval Security Station and the Naval Security Group Command. Supervised 20 analysts and programmers comprised of a mixture of officers, civilians, and enlisted personnel. Applications were commercial in nature including supply, accounting, personnel, inventory control, etc.

Specific duties/accomplishments follow:

Created budget submission for the division and assisted in preparation of the Data Processing Department's budget.

Designed and implemented a project management system for ADP work requests from users. Established standard procedures and forms for requesting ADP services.

Reorganized the Systems and Programming Division from a homogeneous FIFO work assignment organization, using a pool of analysts and programmers, to a project oriented organization. The results were greatly improved efficiency and morale.

Conducted studies on hardware and software purchases. During tenure obtained substantial additions to peripheral capabilities and doubled the 1410 core memory. Implemented a data collection plan to support the acquisition of a 3rd generation computer system based on internal management information.

Served as an instructor for courses in 1410 AUTOCODER programming and Introduction to Computer Principles.

Wrote the first ADP Department standards manual defining system documentation formats and standards.

Assisted in the writing of a tape operating system for the 1410 computer in assembler language. The system was designed to resemble the IBM DOS 360 operating system in terms of control cards.

Succeeded in upgrading the average GS grade point of the division by over one full GS grade.

Designed and implemented a job accounting system for the 1410/1401 computer systems. Wrote the edit and update programs for this system in AUTOCODER and COBOL respectively.

Equipment consisted of a 1410 and 1401 computer system. COBOL and AUTOCODER were the primary programming languages.

COOPER, Roger M.

9/64 to 5/65

STUDENT AVIATOR

ENSIGN, U.S. Navy

Naval Flight School
Pensacola, Florida

Attended ground school and received flight instruction. Graduated in top 25% of all classes. Dropped program of own volition after becoming disinterested in flying as an occupation.

5/65 to 4/67

SUPPLY OFFICER/FIRST LIEUTENANT/
MINE COUNTERMEASURES OFFICER

LIEUTENANT JUNIOR GRADE
U.S. Navy

U.S.S. Endurance (MSO 435)
Long Beach, California

As Supply Officer, was responsible for all supply functions for the ship including procurement, accounting, inventory control, budgeting, etc.

As First Lieutenant/Mine Countermeasures Officer, supervised twenty men in deck seamanship operations such as minesweeping, anchoring, mooring, fueling and replenishing at sea. Attended two month school in Mine Countermeasures and a one month school in administering a Supply Department. Qualified as Command Duty Officer and served as the Executive Officer for one month.

From 6-63 To 8-64

SCIENTIFIC PROGRAMMER

\$2.50/hr

Supervisor-Dr. R. French
Kennecott Copper Research Center
Salt Lake City, Utah

Worked directly for PhD research scientist on assigned projects. Designed statistical sampling plans and collected statistical data on the operation of a large open-pit copper mine and associated copper ore processing works. Designed, wrote and tested scientific data processing programs in FORTRAN for execution on a large 7094/7044/1401 computer complex. Program applications included use of the following techniques:

- regression analysis
- correlation analysis
- linear programming
- analysis of variance

Attended system planning meetings as a technical advisor for computer systems. Presented progress reports and future plans for use of the University of Utah Computer Complex by Kennecott Research Center.

Designed statistical data bases for use in modeling and simulating the copper ore processing cycle.

Mr. HAGEL. Although, Mr. Chairman, I might add that he is not an M.D., but Dr. Custis has overlooked that limitation.

Chairman SIMPSON. I even overlook the fact that many are not lawyers here, and I think that it is a very fine thing to overlook. That is my old profession.

To what extent have you and this task force analyzed the need for the sharing of information between systems? I know that you have talked about sharing, as you just indicated, but has there been any thought of perhaps the Office of Program Planning and Evaluation insuring that that is done, and informing the committee of the results?

Who will keep us advised as to what is to be shared, what cooperation and assistance is being done; may I have your thoughts?

Mr. HAGEL. Well, as I indicated, Mr. Chairman, we have in the last few months, I think, been fairly responsive to the unofficial questions and concerns that a number of veterans' oversight committees have had about our decision. And we have been very willing to share with those committees and agencies what we are doing, and why, and when.

We will continue that, as I mentioned in my statement. I think specifically that I would ask Dr. Dickie to address as briefly as he can some of the specific areas that we will continue to share information on and ask for counsel from appropriate agencies. Dr. Dickie.

Dr. DICKIE. When you are saying sharing systems, what did you have in mind?

Chairman SIMPSON. What you had in mind. What are you going to do after you have your task force?

To what extent will the task force come up with the need and the aspects of sharing information between systems, a continual flow of communication that I think has not occurred within the VA before, at least in my experience? What is going to go on stream, so that everybody knows what the hell is going on? I guess that that is the simplest way to say it.

Dr. DICKIE. In two ways. One would be the management apparatus that we are putting in place in order to insure that what is going on is known throughout the agency. We are involving field users groups for that, which will include representatives from each facility for any of the systems that we developed "in-house" to review systems that we may purchase outside from vendors, and also to look at the option that we might want to contract some of development out. So we will involve the users officially in that way. The sharing that goes on between directors and facilities always has gone on. And we are emphasizing the fact that the director and the people in the facility should control what is happening in their facility.

This is not because it is a nice idea, but because it is essential, if anything is going to happen. The user groups will be working in cooperation, as we now have it, with verification and development centers, which will provide DM&S the technical support for developing these systems, and keeping track of what has been developed, and what has been approved for agency-wide use.

They will also be keeping track of what is available in the individual facilities, if the user groups or other people wish to use

them. The reporting back to the central office will be in the middle, and there will be a group there keeping track of what is going on as well, so the information can be disseminated throughout the field.

Chairman SIMPSON. Is there a sense of confidence that there is demonstrated evidence that the basic core systems can be hooked into a network without affecting the initial programs?

I would like to know a little bit more about what you have learned from other large users' experience. Can you describe that learning process a bit for me?

Dr. DICKIE. I can state that what we have learned in the last 2 months is very little. I have been concentrating on other things. But from past experience, I can say that there is a lot to learn, chiefly that it has been very difficult to integrate these systems.

We are building into the organization the mechanism for integrating systems as we adopt them as one of the agency systems. We will be looking at alternate ways to integrate systems in facilities. That is part of the reason for the pilot sites that we will be looking at in the future.

The methodology for doing this will be developed in conjunction with an outside contract to insure that we will have integratable systems, so that, in fact, we will end up with systems that are integrated.

Chairman SIMPSON. I have some other questions. But in view of time, I will submit those in writing. I had a couple for Dr. Custis.

What type of information does DM&S have each hospital provide to central management?

Dr. CUSTIS. In part I would like to refer back to your previous question, also, Mr. Chairman, in that we have an abundance of management information flowing to us now. There is already considerable sharing between systems involving ADP services to the controller and DVB.

For example, our AMIS system, and our PAID, and our CALM, are all sources of very critical management information. What we are doing in compliance with the Administrator's executive order is reviewing our data needs with the idea of eliminating unnecessary data collection, and providing the hospital directors a revised, sterilized, if you will, minimum list of data requirements.

The other response that I would like to make is that we have no allusion, I hope, that there is suddenly going to be a modern, up-to-date management information network. That is going to await what will probably take, I would say, at least 3 years or more to come about, hopefully through a telecommunications tie-in once all of our hospitals have on board computer capability to join in such an effort.

Meanwhile the input of management information is not that bad. As a matter of fact, it is very good, much better than it is generally being given credit for being.

Chairman SIMPSON. Well, this committee and apparently several others have often asked questions which do not seem to be answered by the use of data which is currently available. I found that true.

Was that issue analyzed to see if data might or should be collected to provide certain answers relating to the accountability and

cost effectiveness of the VA hospital system: areas of perhaps duplicate care, veterans seeking care in separate facilities, diagnostic procedures that are more in use than others, those types of things?

Even perhaps eventually, and I realize that that will be a long way down the road, as to basic eligibility of the veteran population. But are we going to see some answers in those areas that will come from this system?

Dr. CUSTIS. Mr. Chairman, you are identifying exactly the sort of analysis that is now going on by a task force appointed for this specific purpose. Whereas a time date was given, and I think that it was the latter part of May, it is an effort of such magnitude that even after the initial report, over a period I am sure of the next year, it will continue to be updated, and modified, and added to.

Chairman SIMPSON. It would seem that most of the hospitals have their own internal accounting and analysis systems of at least some kind. And I would assume that if we can tie 172 together, we will have available data in ways that we have never had before. Is that the objective?

Dr. CUSTIS. That is exactly right. Also, this ties in with other new data programs, as we developed staffing criteria, new criteria for resource distribution, productivity indices. All of these are going to call for a modification or additional data input need.

Chairman SIMPSON. It is going to be a long, tough haul, is it not?

Dr. CUSTIS. Yes, sir.

Chairman SIMPSON. And the longer and tougher it is with whatever happens, with whatever party is in power in the House, or the Senate, or the Presidency, it is going to continue to require a careful examination of how we use the revenues that are expended in various agencies of the United States.

The whole mission of the VA health care system was originally to take care of the service connected veteran. And now I am always interested in the figure, and there will be those who have different figures, but it seems to be that something between 64 and 70 percent of the VA health care system is utilized by non-service-connected disabled, is that correct?

Dr. CUSTIS. That is the average inpatient division, yes, percentage-wise, service connected and nonservice connected. The outpatient percentage is a little different than that.

Chairman SIMPSON. About the other way around. Then in diagnostic treatment, I have tried to find these figures. And apparently nearly half of those people, of the 64 to 70 percent of the non-service-connected disabled, are being treated for some type of first or second diagnosis of alcohol related problems, is that correct?

Dr. CUSTIS. I am sorry, Mr. Chairman, could I ask you to repeat the question?

Chairman SIMPSON. I am saying that half of the 64 or 70 percent of those that are being treated within the veterans' health-care system who are non-service-connected disabled, that is a figure of 64 to 70 percent, and that one-half of those are being treated under the first or second diagnosis of something in connection with alcohol related disease or condition?

Dr. CUSTIS. If you would say that that percentage has a secondary diagnosis of alcoholism, I would agree. It is a figure that is comparable to the private sector of medical care, however. It is es-

timated that as high as 25 percent of all patients in private hospitals being admitted for trauma, or liver disease, kidney disease, have a secondary diagnosis and perhaps an etiologic factor of alcoholism.

Chairman SIMPSON. Well, in any event, as we deal with the resources of the agency and a \$26 billion budget, and that is the task of the Veterans' Affairs Committee, this procedure will assist us in seeing that care is directed at the highest priorities first. And as funds are available, then to the next priority, and so on.

Is that really what we are up to here, is that part of the objective of this?

Dr. CUSTIS. Mr. Chairman, we try hard to conform to priorities. As a matter of fact, we find it a little difficult that the Congress in its wisdom is adding additional entitlement. And as a result, these priorities start bumping one another. I know well, Mr. Chairman, your feeling about the whole subject of entitlement.

I am constrained to suggest one thing to you. And that is what I choose to call, perhaps erroneously, but a specious use of service connected versus nonservice connected when you are talking about the possibility of reducing entitlement. I would like to give an illustration to make my point.

Let's take for example a non-service-connected veteran, who perhaps served in two wars in combat, and was fortunate enough to come out unscathed. He may or may not have finished some period of time for retirement. Perhaps he did finish 20 years. But anyway, in his middle years, he develops diabetes, or hypertension, perhaps a stroke, a cardiovascular disease. And his earning power is compromised by his physical condition. He is nonservice connected, but he falls into a poverty class. That is one example.

The other example is an individual who is drafted, who perhaps comes in as a disciplinary problem to start with. He has been in no combat situation. Perhaps partly due to his disciplinary problems, he wrecks his car. And he is discharged on a medical service-connected disability.

He is service connected, and he is entitled to highest priority of care. But that first veteran that I described is nonservice connected, and he is at the lowest priority level. I find something wrong with using service connected and nonservice connected as the answer to this whole thing.

Chairman SIMPSON. Well, that is something that I find very wrong, too. As chairman of the Veterans' Affairs Committee, when we touch on that sensitive area, I do manage to get a few pieces of mail generated by our friends here in the village usually. And yet I want to pursue that. I really do.

And the committee, I think, is going to be interested as we pursue it, as soon as I finish up my duties on immigration, so I can pay attention properly. But that is a real concern to me. There is not a soul in this country that would not want to say, "yes," if you talked to him on the street and asked, "do you want to take care of the veterans of this country?" And they would say, "you bet, whatever they require, they should receive."

And they are thinking of the person who fought in France, and Germany, or Saipan, or Vietnam. They are not thinking of a guy who served 3 months or 4 months, never left the United States,

and mashed all of his toes and then gets disability payments for 20 years. They do not think about that guy.

And I do think about that guy. And it does not have anything to do with demeaning veterans. Because the veterans who really know in their heart how much water they carried for this country are offended by those other veterans. That is my experience, what I have found when I go around the country.

So, you know, maybe this will help us in obtaining the data. It will, I know it will. With some kind of centralized data system, we are going to find these issues, and begin to pursue these issues of eligibility. Because that is not what the system was structured for. That is not what it says on the VA building.

"Those who bore the battle, their widows and orphans, those who we need to take care of, and those with needs that we need to take care of in poverty." But we have flitted far from our original course, what I call a typical dose of compassion fatigue in regard to it. Enough of that. Someone will throw a rock into the chamber.

Dr. CUSTIS. Perhaps, Mr. Chairman, we can come up with a computer that can sort this all out.

Chairman SIMPSON. Don't think that I will not be trying to help you. I think that I will have these other questions submitted in writing, and let's go on. I appreciate very much your being here. It has been helpful to the committee.

Mr. HAGEL. Thank you, Mr. Chairman.

Chairman SIMPSON. Now we have Mr. Carr, Frank Carr, please, Commissioner for Government-Wide Management, Automated Data and Telecommunications Service, General Services Administration, accompanied by Francis A. McDonough, Deputy Commissioner for Government-Wide Management, Automated Data and Telecommunications Service, General Services Administration.

Good morning, it is nice to see you. If you would please proceed.

TESTIMONY OF FRANK J. CARR, COMMISSIONER, AUTOMATED DATA AND TELECOMMUNICATIONS SERVICE, GENERAL SERVICES ADMINISTRATION, ACCOMPANIED BY FRANCIS A. McDONOUGH, DEPUTY COMMISSIONER FOR GOVERNMENT-WIDE MANAGEMENT, AUTOMATED DATA AND TELECOMMUNICATIONS SERVICE

Mr. CARR. I would like to submit my opening statement for the record. I would also, however, like to make a few remarks and pick out a few highlights from it to begin our testimony.

Chairman SIMPSON. Please, I appreciate that.

Mr. CARR. I am accompanied by Mr. Francis McDonough. He is my Deputy Commissioner for Government-Wide Management. He has responsibility for our liaison with agencies, with the regulations, the Federal property regulations, the current regulations, the Federal property management regulations that relate to ADP and telecommunications. He is also responsible for our delegation's process.

He has been working with the Veterans' Administration. And I have asked him to accompany me, so that if we get into some specific questions regarding our relationship, he will be able to answer those questions.

I would like to touch on a couple of points. One is that I would like to explain our interest in the situation in the VA, and give you a brief view of how we feel about the past use of ADP in the VA, make an observation about the present situation, and give you some idea of where we think that we are headed.

Under the Federal Property and Administrative Services Act, the Administrator of Federal services has the sole procurement authority for ADP with a few exceptions. We generally delegate procurement authority to agencies under a number of regulations that we have. In certain cases, we review that specific use to which agencies want to apply the procurement authority.

The basic objectives of our policies and procedures are to assure that the Government's ADP requirements are met at the lowest total overall cost through maximum practicable competition. To achieve this objective, agencies must determine their ADP requirements to support mission needs, and to develop procurement strategy plans in a timeframe that will permit effective competition.

Generally speaking, we do not get involved in what the agencies determine their requirements to be. However, if the process that an agency uses to establish their requirements are in our opinion ineffective, then we will move in and attempt to improve that process. So the end result, when you get to the acquisition point, that what is being procured does satisfy their needs and is effective and economical.

Now the VA has a long history of problems in the management of ADP resources. The result has been a delay in the development of the VA health-care delivery system, and the lack of modern computer equipment and techniques adversely affects VA's ability to deliver quality health care to veterans. It aggravates the problem that the VA shares with other medical centers in being to recruit and maintain a well qualified professional staff.

And it increases the cost of such varied hospital operations of scheduling outpatients, maintaining and controlling patient records, and issuing drugs and medication.

This inability to increase the effectiveness of health-care delivery by the use of computer technology has not been because the money has not been spent for computers and application of software. In fact, computers have been bought by the VA. They have remained for years in their packing crates. And software has been developed and paid for that will not run.

At the same time, other computers have been purchased, and useful applications have been implemented. The problem has been the inability to manage the acquisition and use of ADP resources for the VA as a whole. The problem is not simply how to get more computers into the VA, but how to move ahead with the productive use of computers in VA medical centers.

You have already heard about the reviews that Administrator Nimmo has put into place, and the changes that have come about. I would like to make one observation here, though. The Deputy Administrator's review group found that recent centralized development efforts were remote from actual system users, and had failed to meet the needs of the Department of Medicine and Surgery.

These efforts led to excessive control, layering, and frustration within the VA central office and in the field. Based on the recom-

mendations of the review group, the Administrator directed that the use of computers in DM&S be decentralized to the greatest extent possible.

I would like to focus on the words excessive control, layering, and frustration. Because that is evidence not of technological problems, but really an evidence of a management problem.

I met with Deputy Administrator Hagel, as he mentioned, to discuss the problems in the VA. In GSA we have concluded that Administrator Nimmo has placed VA on a new and promising track with regard to information resources management.

It is our feeling, and I conveyed this to Deputy Administrator Hagel, that VA must take several actions to insure that Administrator Nimmo's new direction will be successful. We have recommended the following five actions. These are not all of the ones that ought to be taken, but they are things that we think should be part of what they are doing, or should supplement what they have started.

The first is to cease formulation of equipment oriented solutions to VA information system needs, and develop a 5-year plan based upon programmatic needs. Your comments about planning are well made. I just want to point out that it is often said that if you do not know where you are going, it does not matter what road you take.

By the same token, if you do not care where you are going to be, it does not matter what road you are going to take. A plan is only a plan if it effectively lays out how you are going to get from where you are to where you want to go.

Too many of the documents that are referred to as plans really do not accomplish that; primarily because the end result is not well defined. In other cases, the end result has very little relevance to the basic mission and the needs of the agency.

Again I will also comment on the fact that many of the problems that VA has are shared by many other agencies in the Federal Government.

Second, we have said that they should strengthen the central office's oversight organization to insure that newly directed activities result in productive cost effective initiatives. Third, they should consider an advisory panel of national experts to advise Administrator Nimmo, as necessary, on new information system directions in VA. An outside look, an outside view of what goes on, is extremely important in many cases. Four, designate a recognized executive to provide leadership in automated medical systems within the VA. And five, they should perform pilot information systems projects designed to produce cost benefit data in key areas before major expenditures are proposed.

To help to insure a closer work relationship with GSA, we are withdrawing VA's blanket authority to operate using our newer streamlined delegations process. While this will not have a negative impact on the potential for progress within VA, it will force a closer working relationship between GSA and VA on any new initiative which VA may wish to undertake.

I believe that this combination of fostering a close working relationship emphasizing the five management process issues, and

withdrawing certain blanket authorities, promises the best opportunity for influencing the long standing problems in VA.

With that, I will welcome answering any questions that you may have.

[The prepared statement of Frank J. Carr, Commissioner, Automated Data and Telecommunications Service, General Services Administration, and the GSA's response to written questions submitted by Hon. Alan Cranston, ranking minority member of the Senate Committee on Veterans' Affairs, follow:]

PREPARED STATEMENT OF FRANK J. CARR, COMMISSIONER, AUTOMATED DATA AND
TELECOMMUNICATIONS SERVICE, GENERAL SERVICES ADMINISTRATION

Mr. Chairman, members of the Committee, I am pleased to testify today on the role of management in planning for automated data processing systems to be used at multiple hospital sites.

Under the Federal Property and Administrative Services Act of 1949, as amended by PL 89-306, the Administrator of General Services is responsible for the economic and efficient acquisition of ADP equipment by Federal agencies. While the General Services Administration (GSA) has, with some exception, exclusive procurement authority for general purpose ADP equipment, we generally delegate this authority to the Federal agencies that have the requirement.

The basic objective of our policies and procedures is to assure that the Government's ADP requirements are met at the lowest total overall cost through maximum practicable competition. To achieve this objective, agencies must determine their ADP requirements to support mission needs and develop procurement strategy plans in a time frame that will permit effective competition.

In his March 31, 1982, letter to the Administrator, Congressman Jack Brooks, Chairman of the House Committee on Government Operations expressed concern over the VA's lack of an overall plan to acquire control and account for their

ADP resources in an effective, efficient, and economical manner.

Of particular concern to Chairman Brooks is the VA's recent decision to transfer the management and control of computer hardware and software to the 172 individual medical centers across the country. He expressed his concern that the VA is embarking on a policy which will result in the proliferation of nonstandard ADP systems, duplicate development of software systems, and greatly increased costs.

The VA decentralization policy statement for the use of computers in its medical operations, dated February 18, 1982, was also cited as violating the key provisions of the Paperwork Reduction Act of 1980, by not having the designated senior official approve all ADP procurements.

As a result, Chairman Brooks requested that we withdraw the VA's current blanket delegation of procurement authority until the Agency could bring itself into compliance with Federal procurement policies and the requirements of the Paperwork Reduction Act of 1980.

The VA has a long history of problems in the management of ADP resources. The result has been a delay in the development of the VA health care delivery system. The lack of

modern computer equipment and techniques adversely affects VA's ability to deliver quality health care to veterans. It aggravates the problem VA shares with other medical centers in being able to recruit and maintain a well qualified professional staff. And it increases the cost of such varied hospital operations as scheduling out-patients, maintaining and controlling patient records, and issuing drugs and medication.

This inability to increase the effectiveness of health care delivery by use of computer technology has not been because money has not been spent for computers and applications software. In fact, computers have been bought that have remained for years in their packing crates, and software has been developed and paid for that will not run. At the same time, other computers have been purchased and useful applications have been implemented. The problem has been the inability to manage the acquisition and use of ADP resources for the VA as a whole. The problem is not simply how to get more computers into the VA but how to move ahead with the productive use of computers in VA medical centers.

The new Administrator of the Veterans Administration, Robert P. Nimmo, has recognized the existence of serious ADP management problems. One of his first major directives

was to set in motion an analysis and re-examination of the Agency's overall ADP plans and programs. That process began last October and a review team under the direction of the Deputy Administrator has been making recommendations which VA believes will substantially improve management of this vital resource. VA expects to present to Congress a comprehensive ADP plan for the Veterans Administration by September of this year.

With few exceptions, VA Medical Centers lack the computer capability necessary to support high quality medical care. The Deputy Administrator's review group found that recent centralized development efforts were remote from actual system users and had failed to meet the needs of the Department of Medicine and Surgery (DM&S). These efforts led to excessive control, layering and frustration within the VA Central Office and in the field. Based on the recommendation of the review group, the Administrator directed that the use of computers in DM&S be decentralized to the greatest extent possible. He believes that decentralization of computer use in DM&S will provide the medical centers the maximum opportunity for increased application of modern ADP technology in medical care.

Following Chairman Brooks' letter of March 31, 1982, Commissioner Carr of the Automated Data and Telecommunications

Service, GSA, and Deputy Administrator Hagel of VA met to discuss the problems in VA. In GSA we have concluded that Administrator Nimmo has placed VA on a new and promising track with regard to information resources management. It is our feeling, and we have conveyed this to Deputy Administrator Hagel, that VA must take several actions to ensure that Administrator Nimmo's new direction will be successful. We have recommended that the following actions be taken to establish a proper management control process in VA:

1. Cease formulation of equipment oriented solutions to VA information system needs, and develop a five-year plan based upon programmatic needs.
2. Strengthen the central office oversight organization to ensure that newly directed activities result in productive, cost effective initiatives.
3. Consider an advisory panel of national experts to advise Administrator Nimmo, as necessary, on new information system directions in VA.
4. Designate a recognized executive to provide leadership in automated medical systems within the VA.

5. Perform pilot information system projects designated to produce cost and benefit data in key areas before major expenditures are proposed.

To help ensure a closer working relationship with GSA, we are withdrawing VA's blanket authority to operate using our newer streamlined delegations process. While this will not have a negative impact on the potential for progress within VA, it will force a close working relationship between GSA and VA on any new initiative which VA may wish to undertake.

I believe that this combination of fostering a close working relationship, emphasizing the five management process issues, and withdrawing certain blanket authorities, promises the best opportunity for influencing the long-standing problems in VA.

RESPONSE OF THE GENERAL SERVICES ADMINISTRATION TO WRITTEN QUESTIONS SUBMITTED BY HON. ALAN CRANSTON, RANKING MINORITY MEMBER OF THE SENATE COMMITTEE ON VETERANS' AFFAIRS

Question 1. On page 6 of your testimony, you refer to "withdrawing VA's blanket authority to operate using our newer streamlined delegations process."

Question 1A. What is the "newer streamlined delegations process" and how does it differ, if at all, from the blanket delegation of procurement authority for general purpose ADP equipment?

Answer 1A. The "newer streamlined delegations process" was instituted in January 1981 and updated in the Federal Register on March 2, 1982, as FPR Temporary Regulation 64. A copy is attached. This approach places more responsibility on agencies and expedites the processing of Agency Procurement Requests (APRs). Under this approach, we rely on good management practices in an Agency to ensure that plans are carefully conceived, justified, and implemented. This minimizes pre-approval reviews by GSA prior to granting delegations of procurement authority. Under the streamlined process, we may conduct periodic reviews of past agency procurement actions authorized under this method.

Under traditional operating procedures, all agency requests for ADP equipment and services undergo a comprehensive review, consistent with the nature of the requests, by one of our staff analysts before procurement authority is delegated. Reviews of past agency procurement actions are rare under the traditional approach.

The major difference is that under the traditional process, our reviews are conducted before we delegated procurement authority. Under the streamlined approach, our major reviews are conducted after we delegate procurement authority. The latter approach, obviously, requires some confidence that an agency routinely exercises good management practices in ADP acquisition.

Question 1B. At what time would you consider it appropriate to review your decision to withdraw the VA's blanket delegation of procurement authority for general purpose ADP equipment?

Answer 1B. We have assigned an Agency Liaison Officer to the Veterans' Administration. The purpose of this assignment is to help VA managers to better plan and control information system resources. As a result of this assignment, we will be working with VA on a full time basis for the foreseeable future; and, we will be up-to-date on improvements in the VA. Reconsideration of the withdrawal will be initiated when the VA has completed several well-conceived, justified, and implemented ADP acquisitions.

Question 1C. What specific actions would the VA have to take in order for the GSA to restore this blanket delegation of procurement?

We have recommended to VA that the following actions be taken to establish a proper management control process in that organization:

1. Develop a five-year plan based upon programmatic needs rather than equipment-oriented solutions.
2. Strengthen the central office oversight organization to ensure that newly directed activities result in productive, cost-effective initiatives.
3. Consider an advisory panel of national experts to advise Administrator Nimmo, as necessary, on new information system direction in VA.
4. Designate a recognized executive to provide leadership in automated medical systems within the VA.
5. Perform pilot information system projects designed to produce cost and benefit data in key areas before major expenditures are proposed.

We are hopeful that VA will implement these recommendations and establish the proper process to manage in the decentralized mode in which VA is planning to proceed. We will monitor VA's progress on these issues, and the VA has informally agreed to seek our counsel, through our liaison officer, on the concept and methodology for future major systems procurements.

The ultimate measure, however, will be the successful completion by VA of several ADP acquisitions and system implementations. These would provide confidence that VA's new management processes are in place and can be successful.

I should point out that withdrawal of the VA's authority to operate under Temporary Regulation 64 should not have an adverse affect on the potential for progress in VA. Instead, this action coupled with the assignment of the GSA Agency Liaison Officer should foster a closer working relationship between GSA and the VA on any new initiative the VA may wish to undertake.

GENERAL SERVICES ADMINISTRATION
Washington, DC 20405

February 3, 1982

FEDERAL PROCUREMENT REGULATIONS
TEMPORARY REGULATION 64

TO: Heads of Federal agencies

SUBJECT: Agency requests for delegations of procurement authority
for the acquisition of ADP equipment and services

1. Purpose. This temporary regulation extends and modifies the alternate procedure that agencies may use to request delegations of procurement authority from GSA. The alternate procedure was established on a trial basis by the Administrator of General Services in a memorandum for heads of departments and agencies dated November 14, 1980, and was described in GSA Bulletin FPMR F-126 (45 FR 84151, December 22, 1980). Provisions of the FPR which were changed by FPR Temporary Regulation 62 (46 FR 36143, July 14, 1981) are further modified.

2. Effective date. This regulation is effective December 1, 1981.

3. Expiration date. This regulation expires December 1, 1983, unless earlier revised or superseded.

4. Background.

a. The trial procedure described in GSA Bulletin FPMR F-126 was established to place more responsibility on agencies to reduce paperwork, and to speed up processing of agency procurement requests.

b. The Administrator's memorandum advised agencies that GSA would conduct periodic reviews of procurement actions authorized under this alternate procedure to (i) verify compliance with authorization letter conditions, (ii) assess GSA's procurement policies and directions given to agencies, and (iii) identify agencies to whom greater procurement authority may be granted.

c. GSA has conducted agency on-site reviews of a number of agency requirements being procured under the alternate F-126 procedure. In addition, GSA has evaluated questionnaires sent to agencies concerning the alternate procedures. GSA has also examined its own Agency Procurement Request (APR) review procedure. Based on the on-site reviews and other comments, some findings are set forth below.

(1) Agencies have generally complied with existing policies and regulations in the planning and execution of F-126 procurement actions. File documentation was, as a rule, adequate and well-organized. It reflected compliance or statements of compliance with regulatory provisions. A few instances of noncompliance, questionable procurement practices, and notable areas for improvement were found.

Attachment

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(2) Some agencies were not aware that GSA expected more executive level involvement and oversight responsibility under the alternate APR submission procedure. Little evidence of increased executive level involvement and oversight was found. Most agencies felt they were already equipped to absorb the additional autonomy implied by the alternate APR submission procedure.

(3) Identification of the names of authorized ADP management and procurement officials was considered unduly burdensome by some agencies.

(4) Some agencies believed that withholding a DPA pending submission of additional information under the alternate procedure was contrary to its basic thrust; and further, that GSA's adjustment to granting a DPA with an immediate follow-on review on selected cases amounted only to a provisional clearance to proceed with unstated conditions.

(5) Some agencies have suggested that GSA's periodic on-site reviews are contrary to the intent of the alternate procedure and the Paperwork Reduction Act.

(6) The alternate procedure is perceived by agencies as being a positive program to place appropriate responsibilities on agencies and to shorten program approval time.

d. GSA has concluded that the findings support continuing the alternate APR submission procedure, modified in this regulation, as an agency option.

5. Explanation of changes.

a. The following are specific modifications to the alternate F-126 procedure.

(1) GSA will discontinue the practice of issuing DPA's subject to an immediate follow-on review. However, as warranted, GSA will continue to conduct in-depth reviews of selected requests submitted under the alternate APR submission procedure.

(2) Specific APR submission requirements under the alternate procedure are clarified in Attachment A to this regulation.

b. Any Federal agency may elect (or continue, if an election has been made) to use the alternate APR submission requirements as outlined in Attachment A of this regulation when submitting ADP equipment or service procurement requests to GSA. This procedure is an alternative to the APR submission provisions of § 1-4.1105--Request for procurement action, and the GSA Form 2068, Request for ADP Service, submission provisions of Federal Property Management Regulations (FPMR) § 101-36.203-2--Authorization for commercial procurement, as changed by FPMR Temporary Regulation F-495 (pending publication of § 1-4.1203-1 in a new Subpart 1-4.12 which establishes procurement and contracting policies and procedures for ADP services).

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c. The provisions of §§ 1-4.1104--Procurement authority and 1-4.1107--Federal agency responsibility when procurement is delegated by GSA, as changed by FPR Temporary Regulation 62 and this regulation, apply to the alternate submission procedure authorized by this regulation as well as to APR submissions under standard procedures.

d. Section 1-4.1104 (as amended by FPR Temp. Reg. 62) is further amended by changing paragraph (a)(3) to remove the requirement for names of officials on the listings submitted to GSA, as follows:

§ 1-4.1104 Procurement authority.

(a)(1) To allow for the orderly implementation of a program for the economical and efficient procurement of ADPE, commercially available software, maintenance services, and related supplies, agencies are authorized to procure these items (i) in accordance with the provisions of this § 1-4.1104 provided that requirements are not fragmented in order to circumvent the established blanket delegation thresholds or (ii) when a specific delegation of procurement authority has been provided in accordance with the provisions of §§ 1-4.1105 and 1-4.1106. However, the applicable provisions of FPMR Subchapter F shall be complied with before initiating a procurement action.

(2) The provisions of Public Law 96-511 (the Paperwork Reduction Act of 1980) direct each executive agency head to designate a senior official (officials in DOD) reporting to the agency head to be responsible for implementing the Act. This designated senior official is assigned responsibility for the conduct of and accountability for any acquisitions made under a delegation of authority under section 111 of the Federal Property and Administrative Services Act of 1949 (40 U.S.C. 759) (see 44 U.S.C. 3506 (c)(4)).

(3) The designated senior official in each agency shall advise GSA in writing of the position title and organizational identity of those officials who have been authorized (i) to initiate acquisition actions (including submission of agency procurement requests to GSA) and (ii) to conduct authorized acquisitions (see also §§ 1-4.1105 and 1-4.1107). The designated senior official shall keep the listings current. (A change of incumbent in an unchanged position and organizational assignment does not require notification.) Listings shall be submitted to GSA (CPS), Washington, DC 20405.

* * * * *

e. Section 1-4.1105 (as amended by FPR Temp. Reg. 62) is further amended by making the preamble compatible with the listing submission requirements of § 1-4.1104, as follows:

§ 1-4.1105 Request for procurement action.

If an agency determines that the conditions of the contemplated procurement are not covered by the blanket delegation of procurement authority provisions of § 1-4.1104, or if the conditions of the contemplated procurement change during the procurement process so that those provisions become inapplicable, four copies of the agency procurement request (APR) and other applicable documents shall be forwarded to the General Services Administration (GSA), Washington, DC 20405. The APR shall be signed by an official who has been authorized to initiate the acquisition action and shall identify the position title and organizational identity of the official who has been authorized to conduct the procurement. GSA will process only those submissions signed by authorized officials and identified by position title and organizational identity who appear on the submitted listing (see § 1-4.1104(a)). Other submissions will be returned without action to the submitting office for resubmission by an authorized agency official. In addition, the APR shall contain the name and telephone number of an individual within the agency who shall act as the point of contact for GSA. The APR shall include, as applicable:

* * * *

f. Section 1-4.1107 (as amended by FPR Temp. Reg. 62) is repeated in this regulation so that all changes in FPR Temp. Reg. 62 and GSA Bulletin FPMR F-126 can be consolidated in this regulation and FPR Temp. Reg. 62 can be canceled, as follows:

§ 1-4.1107 Federal agency responsibility when procurement is delegated by GSA.

When acting under a GSA delegation of procurement authority under either §§ 1-4.1104 or 1-4.1106, the agency designated senior official is responsible for compliance with applicable procurement policies, regulations, and, in particular, § 1-4.1109 and the specific terms of the delegation (see § 1-4.1104(a)).

g. Section 1-4.1107-1 is added to explicitly reserve to GSA the right to review agency acquisition actions and documentation, as follows:

§ 1-4.1107-1 GSA review of agency acquisition actions.

GSA reserves the right to review agency actions supporting any acquisition authorized under this Subpart 1-4.11. Documentation relative to agency actions made under the regulations issued under section 111 and other provisions of the Federal Property and Administrative Services Act of 1949, as amended, shall be made available for review upon request of GSA officials. (Documentation should be retained in agency files for such periods as required by applicable law or regulation.)

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6. Agency action.

a. Pending the issuance of a permanent amendment to the Federal Procurement Regulations, agencies shall follow the policies and procedures in this temporary regulation. The agency senior designated official shall advise GSA (CPS), Washington, DC 20405, when the alternate APR submission procedure will be used by the agency. Agency notifications already submitted (under P-126 procedures) will be assumed to continue (as modified herein) unless GSA is notified to the contrary.

b. Agencies may elect to use the alternate APR submission procedure set forth in this regulation when submitting ADP equipment or service requests to GSA. However, because the procedure offers agencies broader procurement autonomy than otherwise provided by regulation, it places greater emphasis on the responsibilities of agency officials to ensure that current regulatory provisions are followed before acquisitions take place. In establishing internal procedures, agencies should strive to (i) designate executive level officials to initiate and accept accountability for acquisition actions under this regulation's alternate APR submission procedure and (ii) provide for an independent review to validate agency compliance with regulations.

7. GSA action.

a. When an agency selects the alternate APR submission procedure under paragraph 5b, above, GSA will promptly review and take appropriate action on the APR. When necessary, GSA will conduct a more in-depth review before issuing a DPA under the alternate APR submission procedure. In some instances, this may require the submission of additional information. DPA's will clearly describe the conditions or limitations, if any, of the delegation. GSA will discontinue the practice of issuing DPA's subject to an immediate follow-review.

b. GSA will conduct periodic reviews of current and past agency acquisition actions as it deems appropriate. These periodic reviews will (i) verify agency compliance with regulations and DPA conditions or limitations, (ii) assess GSA procurement policies and directions given to agencies, and (iii) assess the agency's planning and control mechanisms regarding the use of the delegated authority to accomplish economical and efficient acquisition, use, and management of ADP resources. GSA will take appropriate actions when findings indicate failures to comply with regulations or conditions or limitations of individual DPA's, or unauthorized deviations to regulations. Actions may include voiding a DPA before award and withdrawing an agency's authority to use the alternate APR submission procedure.

c. GSA encourages agencies to establish early planning coordination with GSA's agency planning and authorization officials (CPSA). Often potential delays and problem areas can be identified and remedied in advance of the formal APR submission.

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d. For information and assistance in the agency APR submission, GSA authorization, and agency review procedures in this temporary regulation contact:

General Services Administration (CPSA)
Washington, DC 20405
Telephone: FTS or local 566-1566
Commercial toll - (202) 566-1566

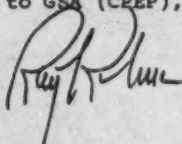
e. When required, the information submitted by an agency may be made available to Government oversight activities.

8. Effect on other directives.

a. The alternate APR submission procedure set forth in this regulation supersedes the procedures set forth in GSA Bulletin FPMR F-126, dated November 4, 1980, which has an expiration date of December 1, 1981.

b. This regulation supersedes and cancels FPR Temporary Regulation 62, dated June 22, 1981.

9. Submission of comments. Comments are invited concerning the effect or impact of this regulation and the policy and procedures that should be adopted in the future. Comments should be forwarded to GSA (CREP), Washington, DC 20405, not later than May 31, 1982.



RAY KLINE
Acting Administrator of General Services

February 3, 1982

FPR Temp. Reg. 64
Attachment A

**Alternate APR Submission Requirements
Agency Request for ADP Equipment or Services**

Agency Information: Provide agency name, address, and location where equipment will be installed or services will be performed. Provide names and telephone numbers of appropriate technical and contracting officials. Identify the position title and organizational identity of the official authorized to conduct the acquisition (see § 1-4.1104(a)).

Project Title and Description:

a. Provide the project title and a brief but specific description of the primary program(s) that the ADP equipment or services will support.

b. Provide a brief but specific description of the current major system components (including ADPE configuration) or services supporting the program(s).

c. Provide a brief but specific description of the major system components or services to be acquired during the systems life of the requirement. This should reflect resources required for system expansion (i.e., anticipated augmentations, upgrades, and other system modifications) during the systems life if such requirements will be included in the solicitation document as evaluated options. The delegation resulting from this submission will be limited to resources described herein.

Acquisition Strategy:

a. Indicate whether the proposed procurement approach is competitive or noncompetitive (sole source, including use of specific make and model purchase descriptions); if competitive, whether compatibility limited requirements will be used on either a mandatory or nonmandatory basis; what acquisition plans will be solicited (lease, lease with option, lease to ownership, or purchase plan); and specify the type of contract expected to be used.

b. Identify by fiscal year quarter the following planned milestones: Release of solicitation document and contract award.

c. If the request involves a pilot or prototype, the strategy for the follow-on implementation phase must be described.

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Estimated Contract Life and Cost:

The estimated contract cost of the acquisition (not the overall system life cost) shall be identified by type of request for the contract life and shall include all anticipated optional quantities, services, and periods. Detailed cost breakdowns may be included when necessary to describe clearly the estimated costs. The estimated contract cost (for all years) should correspond to the planned contract life. The delegation of authority resulting from this submission will be limited to quantities and years described herein.

<u>Type of Request:</u>	<u>Estimated Contract Cost:</u>	<u>Contract Life:</u>
- ADPE system or item	_____	_____
- ADPE system replacement/ augmentation	_____	_____
- Proprietary software	_____	_____
- Equipment maintenance	_____	_____
- ADP services acquired under TSP/BA	_____	_____
- ADP services acquired under TSP/MAS	_____	_____
- ADP services acquired under TSP exception	_____	_____
- ADP services outside TSP scope	_____	_____

Regulatory Compliance:

a. Provide a statement which indicates that the agency has reviewed and complied (or will comply) with all applicable regulations, or (i) list those deviations to the regulations that apply to this request for which approval is sought and (ii) provide an explanation for each regulatory deviation request (see § 1-4.1100-3).

b. Provide the date of completion or most recent update of the following documentation, or indicate not applicable:

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Attachment A

1. Requirement analysis (see FPMR § 101-35.207): _____
2. Comparative cost analysis (see FPMR § 101-35.209): _____
3. Performance evaluation for the currently installed ADP system (see FPMR Subpart 101-36.14): _____
4. Findings to support the use of compatibility limited requirements (see § 1-4.1109-12) _____
5. Software conversion study (see § 1-4.1109-13): _____
6. Justification to support a contemplated non-competitive (sole source) procurement (including the use of specific make and model purchase description) (see § 1-4.1105(k)). _____
7. Description of those planned actions necessary to foster competition for subsequent procurements (see FPMR § 101-35.206-1). _____

Agency remarks

Provide additional information deemed necessary concerning any of the above items or special conditions associated with this procurement; e.g., required building construction/modification by GSA.

Agency/GSA references

Provide references to previous GSA authorizations (including previous GSA case numbers), meetings, telephone discussions, etc.

Agency authorized signature, position title, organizational identity date

Note.--GSA will process only those agency submissions signed by an authorized official (see § 1-4.1104(a)). The official's position title and organizational identity must be provided.

Chairman SIMPSON. Does that mean that what you see happening within the VA on this project signifies some hope?

Mr. CARR. Yes, I do. I think that there are two things that are most important to any large organization in its successful use of information technology. The first is top management involvement. The top management, in this case the agency head, has made a decision that he personally is going to get involved in how the resources will be managed. That is a first step. He has to decide what his responsibility is; what role he wants to play. The second is putting the users in a position where they have greater influence over how those resources will be used.

In too many cases there is an abdication at the top as far as information resources management is concerned. I have often said that if you ask an agency head or an assistant secretary of administration what is information resource management, you get the same kind of answer to that question as to the one about what is the difference between ignorance and apathy. And that answer is, "I do not know, and I do not care."

I think that is the No. 1 problem, top management interest, involvement, and actively taking a role. The second, the user has to decide what it is he needs to accomplish his task, rather than having somebody outside of the organization telling him what is good for him.

Chairman SIMPSON. So you indicate that at least the central reason why this thing has floundered along so long is because of certain management deficiencies. And you see that those right now seem to be at a good level for some kind of progress right now?

Mr. CARR. I think that the first step has been taken to raise questions about the management process and the management structure. I think that it is being exposed to view. People recognize what the problem is. I think that the reference to the lack of control and the frustration is probably because the responsibility has not been pin pointed.

There have been too many people that have different ideas about what the solutions are. It has taken too long for someone to move ahead and take aggressive action in correcting the problems. Getting the eventual solution more into the hands of the users, but under some form of centralized control and oversight, I think is a step in the right direction.

Chairman SIMPSON. You indicate this computer availability. How many computers does DM&S have, and how many more do they need, and what amount of expense would the VA expect over the next 3 fiscal years, as discussed in the present guidelines?

And without having delegated authority to purchase computer equipment outside of GSA, how much more time will be consumed as they try to automate under the current plan?

Mr. CARR. First of all, I think that the three questions that you are asking, you knew when you asked them that nobody has the answers to them. I have been at hearings before when the question has been asked how many computers does VA have. I think that there was a recent attempt to determine how many computers that the VA has by checking to see how many times they used the inquiry capability of the National Library of Medicine. The two are not related.

I have seen printouts that show equipment that in fact took pieces of electronic equipment that were not computers and called them computers and put them on the list. No one really knows the answer to that first question. And clearly, no one knows the answer to the other questions.

As far as the move forward, how much they have to spend, it really gets to the question of what it is that they have to do, and how are they going to move ahead to do it. I do not think that there will be a negative impact as far as our withdrawal of the procurement authority. The only thing that that does is it puts a further burden on us to be actively involved with the VA as they move forward, and develop their plans, and take those future steps.

We have gone through this process before with other agencies. I think that the most notable recent example is the Social Security Administration, which has some very, very large problems. We have very successfully worked with them in developing an extremely good comprehensive 5-year plan. This is the first time that they have ever had it. The Administrator of the Social Security Administration is very pleased in the way that we have been able to work together on it. And I hope that the same thing can happen with the VA.

Chairman SIMPSON. Yes, I know of your work there with social security, and tying in little things like when people are born and when they die. That they can run those through the same computer. I thought that that was fascinating that they begin to do that. And they are, which is certainly a beacon light for all.

That is a little cynical. But good heavens, it is hard to believe sometimes how we slog along at it, and that is certainly what we have been doing here.

So they have an unknown amount of computer equipment. Yet some of the hospitals are rather well in progress toward automation, and have done very well. And others have made little or no progress. I suppose again that that is simply just a management situation. Is it in your mind?

Mr. CARR. I believe that it is. Because I think that what you would find if you went to the hospitals that in fact made some progress is you would probably find people who have taken the initiative, have worked outside of whatever the rules that had been established, and managed to find some way of accomplishing their purpose.

As I mentioned specifically in my testimony, the problem is simply not a matter of getting computers out there, but putting them to good use. The problem has not been of simply getting equipment out there, but in fact how to take the successes and make it applicable to the VA as a whole. The people who have really succeeded have kind of been working outside of the system.

Chairman SIMPSON. Did you see this OMB letter that was sent to the committee for today's hearing?

Mr. CARR. Yes, I did.

Chairman SIMPSON. And since you have read that, do you feel that OMB is correct in stating that the current planning level will enable DM&S to procure computer equipment at the best price within the Federal procurement guidelines?

Mr. CARR. Again as far as procuring within the guidelines, I do not think that that should be any difficulty. I do not know how one can reach the conclusion as to what that level should be without some kind of comprehensive statement about where they are going and what they are trying to do. I look forward to the September timeframe, and the plan that is put together at that time as answering those specific questions. The three questions that you put to me earlier should be answered at that point in time.

Chairman SIMPSON. That would be helpful. I thank you, very much, Mr. Carr. You have been very helpful, and your testimony is very important to us. Thank you, very much, and thank you, Mr. McDonough.

Mr. CARR. Thank you, Mr. Chairman.

Chairman SIMPSON. I would ask that the next three witnesses, who represent users and are experienced with the designing of large medical data processing systems, please come to the witness table at the same time, if you would.

Colonel McGinnis, Director of the Tri-Service Medical Information System program office, of the Office of the Assistant Secretary of Defense for Health Affairs, accompanied by Mr. Alan Andreoni, chief of the systems planning division of the TRIMIS program office.

And Dr. Thomas Lewis then, please, assistant director for information systems, the clinical center of the National Institutes of Health. And Paul Gary Shapin, director of information systems of the Fairfax Hospital Association.

So in that order, would you please present your testimony to the committee, please. Thank you very much.

TESTIMONY OF COL. JOHN W. MCGINNIS, DIRECTOR, TRI-SERVICE MEDICAL INFORMATION SYSTEMS PROGRAM OFFICE, OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE FOR HEALTH AFFAIRS, ACCOMPANIED BY ALAN ANDREONI, CHIEF, SYSTEMS PLANNING DIVISION, TRIMIS PROGRAM OFFICE, DEPARTMENT OF DEFENSE

Colonel MCGINNIS. Good morning, Mr. Chairman and members of the committee, I appreciate this opportunity to appear before you, and make this statement on behalf of the TRIMIS program. The TRIMIS program is a Department of Defense chartered program, and has as its role the management of medical information systems, development, and/or acquisition, testing, and evaluation for the DOD health care community. The DOD health care community consists of 165 hospitals and over 300 freestanding clinics.

The Assistant Secretary of Defense oversees all aspects of the TRIMIS program receiving additional guidance from the Assistant Secretary of Defense, the Comptroller, in the areas of budgeting and automated data processing policies.

TRIMIS is also under the guidance of the major automated information systems review council and the Department of Defense life cycle management program. The latter is the process for administering an automated information system over its life cycle with particular emphasis on strengthening early decisions which shape cost and utility.

The principles of the life cycle management and the major automated information systems review Council are described in Department of Defense Directives 7920.1 and 7920.2. Reviews are conducted at designated decision points corresponding to the phases of the automated information system's life cycle.

Overall the life cycle of an automated information system is comprised of phases such as: Mission analysis/project initiation; concept development; definition/design, system development, and operation.

Early decisions must be based on full consideration of functional automated data processing, and telecommunications requirements, and life cycle costs, in order to produce an effective automated information system.

The TRIMIS approach is based on ascertaining the requirements of the functional users, and obtaining the best support to meet these requirements. User needs have been defined and approved by the military departments in nine primary functional areas of each medical treatment facility.

These areas are: Pharmacy, radiology, laboratory, patient administration, patient appointment and scheduling, dietary, logistics, order entry/results reporting, and dental. Other functional areas include computer assisted practice of cardiology, automated cardiac catheterization laboratory systems, medical records, in-service education, and teleradiology.

After functional requirements are defined and approved, they are incorporated into a request for proposals [RFP]. The technical data automation industry supplies the solutions to satisfying these requirements through the competitive procurement process.

TRIMIS is following an evolutionary approach to systems development. In the first phase, the best ways to meet the needs of work centers are verified through examining existing capabilities by implementing available systems in high volume work centers.

These include pharmacy, laboratory, patient appointment and scheduling, and radiology. The knowledge gained from these initial systems is then being used to refine the requirements for standardized systems. The composite needs of the medical treatment facility will be met by assembling the necessary standardized systems to form a composite health care system.

TRIMIS together with the three military departments has also developed tri-service functional specifications for patient administration. These specifications will be used to develop a prototype for a nucleus that efficiently moves data between the various systems and then holds certain data centrally. The two systems that seem to move this data most efficiently and economically are patient administration and patient appointing and scheduling.

Commercial systems were acquired under a modified A-109 procurement strategy. For instance, 3 pharmacy systems were procured with an option for 12 more. The street value of these 15 systems for an 8-year life cycle was over \$16 million at the time that the request for proposals went out to industry.

This procurement included hardware, software, communications, installation, and maintenance costs for the 8 years. TRIMIS signed the contract for \$6.1 million. We had similar experiences with laboratory systems, patient appointment and scheduling systems, and

radiology systems, where very significant savings have occurred with the use of bulk procurements.

The TRIMIS program has awarded two additional system contracts in the areas of computer assisted practice of cardiology [CAPOC] and the automated cardiac catheterization laboratory system [ACCLS]. This is a system that provides for retrofitting laboratories that already have manual cardiac catheterization laboratories with automated capabilities of online analysis, storage and display. These commercial systems were available for the initial operating capabilities, the CAPOC and ACCLS systems, and were competitively procured.

There are other systems where there was no suitable market capability. These were in the area of dietary, logistics, and dental. So TRIMIS is developing these inhouse, and managing the development.

Each of the military departments requires a formal hierarchical flow of data from facility to intermediate command, to the Surgeon General's Office on to DOD. Thus, to have a consistent basis for comparison, the data to be compared must be standard. In addition, DOD has other standard systems either in being or under development with which TRIMIS medical systems must coexist.

These are in the areas of personnel; finance; the uniform chart of accounts; defense eligibility enrollment system; a uniform staffing methodology, and a defense medical information systems.

Thus, there are other requirements for standardization of data, and handling of that same data. TRIMIS adheres to DOD policies for life cycle management covered in DOD directives 7920.1 and 7920.2; documentational standards in 7935.1S; program and project standards covered in DOD instructions 5000.1 and 5000.2

Assessment and evaluations of each of the TRIMIS system is underway. Prospective cost benefit analyses were accomplished before system installation, and are now in the formal evaluation process that will culminate in validated cost benefit analyses studies.

An independent contractor applying a classical approach to assessment is currently examining the various TRIMIS systems to insure that all user requirements are being met, and to what level these TRIMIS systems are cost beneficial. The assessment process allows the program to obtain verified documented results before any significant investment is made.

Preliminary data show that systems already in the field are both cost effective and meeting many of the needs of the health-care providers with the context of the steady progress goals as stated in DOD directive 6000.5, which is the charter for the program. That is the end of my statement.

Chairman SIMPSON. Thank you very much, Colonel. That is very helpful.

[The prepared statement of Col. John W. McGinnis, Director, Tri-Service Medical Information Systems program office, Office of the Assistant Secretary of Defense for Health Affairs, Department of Defense, DOD's response to written questions submitted by Hon. Alan Cranston, ranking minority member of the Senate Committee on Veterans' Affairs, and DOD directives Nos. 7920.1 and 7920.2 follow:]

PREPARED STATEMENT OF COL. JOHN W. MCGINNIS, DIRECTOR, TRI-SERVICE MEDICAL INFORMATION SYSTEMS PROGRAM OFFICE, OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE FOR HEALTH AFFAIRS, DEPARTMENT OF DEFENSE

Mr. Chairman and Members of the Committee, I appreciate this opportunity to appear before you to make this statement on the Tri-Service Medical Information Systems Program.

The Tri-Service Medical Information Systems (TRIMIS) Program, a Department of Defense (DoD) chartered Program, has as its role the management of medical information systems development/acquisition, testing, and evaluation for the DoD health care delivery system. DoD has 165 hospitals and over 300 clinics. Hospitals range in size from less than 20 beds to 1,000 beds and provide the full spectrum of care.

The Assistant Secretary of Defense (Health Affairs) oversees all aspects of the TRIMIS Program, receiving additional guidance from the Assistant Secretary of Defense (Comptroller) in the areas of budgeting and automated data processing policies. TRIMIS is under the guidance of the Major Automated Information Systems Review Council and Department of Defense Life Cycle Management Program. This is the process for administering an automated information system over its whole life with particular emphasis on strengthening early decisions which shape costs and utility. The principles of Life Cycle Management and the Major

Automated Information Systems Review Council are described in Department of Defense Directives 7920.1 and 7920.2. Reviews are conducted at designated decision points corresponding to the phases of the automated information system life cycle. Overall, the life cycle of an automated information system is composed of the broad phases of: Mission Analysis/Project Initiation; Concept Development; Definition/Design; System Development; and Development/Operation. Early decisions must be based on full consideration of functional automated data processing and telecommunications requirements in order to produce an effective automated information system.

The TRIMIS approach is based on ascertaining the requirements of functional area users and obtaining the best support for their requirements. User needs have been defined and approved by the Military Departments in nine primary functional areas of the medical treatment facility. These areas are: Pharmacy, Radiology, Laboratory, Patient Administration, Patient Appointment and Scheduling, Dietary, Logistics, Order Entry/Results Reporting and Dental. Other functional areas include Computer Assisted Practice of Cardiology, Automated Cardiac Catheterization Laboratory Systems, Medical Records, In-Service Education, and Teleradiology. After functional requirements are defined and approved, they are incorporated into a Request for Proposal (RFP). The technical data automation community supplies the solutions to satisfying these requirements through the competitive procurement process.

TRIMIS is following an evolutionary approach to system development. In the first phase, the best ways to meet the needs of work centers, or functional areas, in hospitals are verified through examining existing capabilities, implementing Pilot Systems and installing Initial Operating Capabilities in high volume work centers. The Initial Operating Capabilities include Pharmacy, Laboratory, Patient Appointment and Scheduling, and Radiology. Knowledge gained from these initial commercial systems is being used to develop requirements for Standardized Systems. The composite needs of the medical treatment facility will be met by integrating Standardized Systems to form a Composite Health Care System. The Composite Health Care System will evolve from stand-alone systems into a total medical information network.

TRIMIS, together with the three Military Departments, has also developed Tri-Service functional specifications for patient administration and data base management systems. The specifications provide the core for the standardized effort. The TRIMIS Technical Standards Project focuses on expanding and standardizing the set of Patient Administration functions (including admission, disposition, and transfer) and on developing standard communication and design protocols. TRIMIS results have shown that there is a basic set of data shared among all systems. This is a technical capability to handle shared data and is referred to as a "nucleus". TRIMIS has developed this nucleus prototype that moves data between systems and holds

certain data centrally. The two systems that seem to move the data most efficiently and economically are Patient Administration and Patient Appointing and Scheduling.

Commercial systems were acquired using a modified A-109 procurement. Three Pharmacy systems were procured with an option for 12 more. The street value of the 15 systems for an 8-year life cycle was over \$16 million, including hardware, software, communications, installation and maintenance. The TRIMIS Pharmacy contract was signed for \$6 million.

Using the same approach, three Laboratory systems were acquired with an option for nine more for a cost of \$12 million versus a street value of approximately \$27.1 million. The estimated life cycle cost of the commercial Patient Appointment and Scheduling (PAS) system was \$24 million. The TRIMIS contract for PAS was signed for \$11.6 million. Similarly, the Radiology system estimated cost was \$13 million; the contract life cycle cost is \$11.5 million.

The TRIMIS Program has awarded two additional system contracts. A regionalized system of providing DoD medical facilities computer assisted interpretation of electrocardiograms (ECGs) is accomplished via the Computer Assisted Practice of Cardiology (CAPOC) system. The Automated Cardiac Catheterization Laboratory System (ACCLS) provides for retrofitting existing cardiac catheterization laboratories with the capabilities of automated

on-line analysis, storage and display of cardiac catheterization information.

Commercial systems were available for the IOCs, CAPOC and ACCLS. However, no suitable dietary, logistics or dental systems were available. As a result, TRIMIS is managing the development of these systems.

Each of the Military Departments requires a formal hierarchical flow of data from facility to intermediate command, to the Surgeons' General office to DoD. Thus, if management wants a consistent basis for comparison, the data must be standardized. DoD also has other standard programs, either in being or under development with which TRIMIS medical systems must interface, i.e., personnel, finance, Uniform Chart of Accounts (UCA), Defense Enrollment Eligibility System (DEERS), Uniform Staffing Methodology (USM) and Defense Management Information System (DMIS). Thus, there will be more requirements for standardization of data and handling of same.

TRIMIS adheres to DoD standards for Life Cycle Management covered in Department of Defense Instructions (DoDIs) 7920.1 and 7920.2, documentational standards in 7935.1S; program and project standards in DoDIs 5000.1 and 5000.2. There are also Federal Information Processing Standards (FIPS) and American National Standards Institute (ANSI) standards. These standards do not inhibit individual data usages as TRIMIS intends to provide a

powerful report generator to meet individual facility requirements.

Assessment and evaluation of each of the TRIMIS systems is underway. Prospective Cost Benefits Analyses (CBAs) were accomplished before system installation and are now in the formal evaluation process that will culminate in validated actual CBAs. An independent contractor, applying a classical approach to assessment is currently examining TRIMIS systems to insure that user requirements are being met and that TRIMIS systems are cost beneficial. A system that may be cost justifiable in a 1,000 bed facility may not be in a 50-bed facility. The assessment process allows the Program to obtain verified, documented results before a significant investment is made. Preliminary data show that systems already in the field are both cost-effective and meeting many of the needs of health care providers.

RESPONSE OF THE DEPARTMENT OF DEFENSE TO WRITTEN QUESTIONS SUBMITTED BY HON. ALAN
CRANSTON, RANKING MINORITY MEMBER OF THE SENATE COMMITTEE ON VETERANS' AFFAIRS

Question 1. When was the Tri-Service Medical Information Systems (TRIMIS) Program established?

Answer 1. The Tri-Service Medical Information Systems (TRIMIS) Program was chartered by Department of Defense Directive 6000.5 on July 11, 1976 and operations commenced in October 1977. Organizational and staffing activities occupied much of the intervening period.

Question 2. What costs has the Department of Defense incurred to date in planning and implementing the TRIMIS Program?

Answer 2. Since commencement of operations, the Department of Defense has invested \$52 million in planning and implementing the TRIMIS Program. (This figure includes payment of civilian personnel costs for the DoD Program Office and associated Service support staffs, site preparation, TDY, computer support, and program support contractor costs.) Additionally, \$69 million was required for procurement of 81 commercial systems that were competitively procured and have been installed to date or will be installed by the end of Fiscal Year 1983. These procurements include hardware, software, licensure fees, operations and maintenance of the systems for a period of eight years.

Question 3. In how many of DoD's 165 hospitals do you currently have operating automated

- i) pharmacy?
- ii) laboratory?
- iii) radiology?
- iv) patient appointment and scheduling?
- v) patient administration?
- vi) dietetics?

Answer 3. Department of Defense operates 165 hospitals and over 200 medical treatment facilities that provide only outpatient medical care. TRIMIS installations to date support both types of facilities. Included in the systems installation figure are:

	<u>Hospitals</u>	<u>Clinics</u>	<u>Additional Hospital/Clinic Installations By 30 Sep 83</u>
Pharmacy	13	15	5/
Laboratory	5	2	7/30
Radiology	4	2	8/
Patient Appointment and Scheduling	3		7/16
Patient Administration	2	2	6/
Food Service (Dietetics)	2	2	
Also included are systems for:			
Logistics	3		13/
Medical Records	3		
Hypertension/Diabetes Management	3		
Automated Multi-Phasic Health Testing	1		
Automated Cardiac Catheterization Laboratory	7		4/
Computer Assisted Practice of Cardiology	48	37	76/56
Teleradiology	2	3	
Record Tracking	1		

In addition, a TRIMIS centrally managed automated formulary system supports 207 facilities including three Coast Guard hospitals.



October 17, 1978
NUMBER 7920.1

ASD(C), ASD(MRA&L), ASD(C³I)

Department of Defense Directive

SUBJECT: Life Cycle Management of Automated Information Systems (AIS)

- References:
- (a) DoD Directive 5100.40, "Responsibility for the Administration of the DoD Automatic Data Processing Program," August 19, 1975
 - (b) DoD Directive 5000.1, "Major Systems Acquisitions," January 18, 1977
 - (c) OMB Circular A-109, "Major System Acquisitions," April 5, 1976 and associated OFPP Pamphlet No. 1, August 1976
 - (d) DoD Instruction 5010.27, "Management of Automated Data System Development" November 9, 1971 (hereby canceled)
 - (e) through (r), see enclosure 1

A. PURPOSE

This Directive (1) supplements the provisions of reference (a) by establishing joint technical and functional policy governing the life cycle management and control of automated information systems; (2) applies the principles of references (b) and (c) to major automated information systems; and (3) cancels reference (d) and Report Control Symbol RCS DD-COMP(AR)1130.

B. APPLICABILITY AND SCOPE

1. The provisions of this Directive apply to the Office of the Secretary of Defense (OSD), the Military Departments, the Organization of the Joint Chiefs of Staff, and the Defense Agencies (hereafter referred to as "DoD Components").

2. Its provisions govern only those automated information systems utilizing automatic data processing equipment (ADPE) encompassed by DoD Directive 5100.40 (reference (a)).

C. CONCEPT AND OBJECTIVES

1. An automated information system (AIS) is a collection of functional user and ADP personnel, procedures, and equipment (including ADPE) which is designed, built, operated and maintained to collect, record, process, store, retrieve and display information.

2. Life cycle management (LCM) is the process for administering an AIS over its whole life with emphasis on strengthening early decisions which shape AIS costs and utility. These decisions must be based on full consideration of functional, ADP, and telecommunications requirements in order to produce an effective AIS.

3. Overall, the life cycle of an AIS is composed of the broad phases: Mission Analysis/Project Initiation; Concept Development; Definition/Design; System Development; and Deployment/Operation. These phases and the associated policies are described in enclosure 2.

4. The LCM process seeks to achieve the following objectives:

a. Assure management accountability for the success or failure of AIS developments and identify the roles and responsibilities of functional, telecommunications and ADP managers throughout the life cycle of an AIS.

b. Establish a control mechanism to assure that an AIS is developed, evaluated and operated in an effective manner at the lowest total overall cost.

c. Provide visibility for all resource requirements of an AIS and communication with Congress early in the acquisition process for a major AIS.

d. Promote cost effective standardization of AIS for use throughout the Department of Defense.

D. POLICY

1. The LCM concept, guidelines, and documentation prescribed herein and in DoD Instruction 7920.2 (reference (e)) shall be applied to major automated information systems and, as appropriately adapted, employed for each AIS which is not designated as a major AIS.

2. An AIS or significant revision of an existing AIS meeting any one of the following criteria shall be designated as a major AIS:

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a. Has anticipated costs in excess of \$100 million during the time span from the Mission Analysis/Project Initiation phase through the extension and installation of the developed AIS to all operating sites; or

b. Has estimated costs in excess of \$25 million in any single year; or

c. Is designated as being of special interest by the Office of the Secretary of Defense (OSD).

3. Estimates for measurement against these criteria shall be computed in constant dollars of the Mission Analysis/Project Initiation phase year and consider, for this particular computation (a) functional costs such as initiation investigation, requirements definition, test certification; (b) telecommunications costs such as dedicated communications circuits; and (c) ADP costs as shown on the Computer Systems Aggregate Cost Summary in DoD Manual 7110.1-M (reference (f)).

4. A major AIS shall be reviewed and approved at the OSD level in accordance with DoD Instruction 7920.2 (reference (e)), unless it also meets the thresholds/criteria of DoD Directive 5000.1 (reference (b)). In this case, the AIS shall be processed for Secretary of Defense approval in accordance with that Directive.

5. An AIS that does not meet the criteria for designation as a major AIS shall be reviewed and approved at an organizational level designated by the Head of the DoD Component concerned.

6. The review and approval mechanisms used during the life cycle management of any AIS shall include coequal functional, telecommunications, and ADP participation and consultation to ensure full consideration of the economic, technological, and operational factors involved.

7. The Congress shall be informed about major AIS acquisitions as they occur. Defense mission deficiencies, needs and objectives for each major AIS normally shall be reported through the programming and budgeting process. Informal discussions and formal progress reports to congressional authorization, oversight, and appropriation committees are encouraged at regular intervals during the life cycle of each major AIS.

8. Guidelines contained in Federal Government Accounting Pamphlet No. 4 (reference (g)) shall be followed in accounting for actual ADP costs.

9. Specific tasks, decision points, and milestones shall be established within each life cycle phase of an AIS in order that progress can be assessed and corrective action taken if time or cost slippages occur.

E. RESPONSIBILITIES

1. The Assistant Secretary of Defense (Comptroller) shall:

a. Serve as focal point to integrate and unify the AIS management process within the Department of Defense and monitor compliance with this Directive.

b. Provide for OSD management assessment, in coordination with the appropriate elements of the OSD staff, of each major AIS which does not meet the criteria established in DoD Directive 5000.1 (reference (b)).

c. Participate in OSD management assessment of each major AIS which meets the criteria of DoD Directive 5000.1 (reference (b)).

d. Approve the establishment of information reporting requirements under the provisions of DoD Directive 5000.19 (reference (h)).

e. Process or approve requests from DoD Components for exemption or deferments from the use of Federal Information Processing Standards (FIPS).

2. The Under Secretaries of Defense and Assistant Secretaries of Defense, within their areas of responsibility, shall:

a. Ensure the implementation of the provisions of this Directive, and designate a focal point for coordination purposes.

b. Conduct or provide for participation in the OSD assessment of each major AIS.

c. Ensure that management systems plans are developed to provide for appropriate DoD-wide uniformity and standardization of similar functions in AIS throughout DoD.

d. Develop Executive Agency charters when multi-Component participation is required for development of a DoD-wide AIS.

e. Approve functional changes only after full consideration of the time and cost required to change an AIS.

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f. Ensure that telecommunications aspects of an AIS are administered in accordance with DoD Directive 4630.1 (reference (i)). .

3. The Head of each DoD Component shall:

a. Ensure that functional, ADP, and telecommunications plans are developed and maintained to reflect objectives, projected functional requirements, anticipated operating environments, and obsolescence conditions.

b. Require functional managers to establish requirements, perform functional system planning and design, maintain configuration control of functional processes, assist in the development of ADP and telecommunication requirements when requested, perform field test, and affirm adequacy of an AIS.

c. Require ADP and telecommunication systems managers to assist functional managers in functional systems design and planning, develop the technical design of the AIS which satisfies the functional requirements, and maintain configuration control of AIS hardware and software.

d. Evaluate DoD policies and criteria and recommend revisions which promote increased AIS efficiency and which preclude non-cost effective modifications to an AIS.

e. Appoint or approve the appointment of a project manager for each major AIS, and develop charters stating the responsibility, authority, and accountability of a project manager in the management of an AIS.

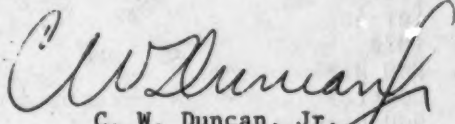
f. Provide for effective assessment of the status and progress of each AIS.

g. Provide for approval of each AIS that is not designated as a major AIS, at stated decision points, and for approval of a corrective action plan for each such AIS when actual time and cost between major milestones exceeds planning estimates by 15% or more.

h. Advise the ASD(C) immediately when an AIS is expected to meet the criteria for a major AIS.

F. EFFECTIVE DATE AND IMPLEMENTATION

This Directive is effective immediately. Forward two copies of implementing instructions to the Assistant Secretary of Defense (Comptroller) within 120 days.



C. W. Duncan, Jr.
Deputy Secretary of Defense

Enclosures - 3

1. References
2. Life Cycle Phases
& Policies
3. Mission Element Need
Statement

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REFERENCES

- (e) DoD Instruction 7920.2, "Major Automated Information Systems (AIS) Approval Process," October 20, 1978
- (f) DoD Manual 7110.1-M, "Budget Guidance Manual," August 8, 1975, authorized by DoD Instruction 7110.1, August 23, 1968
- (g) Federal Government Accounting Pamphlet No. 4, "Guidelines for Accounting for Automatic Data Processing Costs," 1978
- (h) DoD Directive 5000.19, "Policies for Management and Control of Informatic Requirements," March 12, 1976
- (i) DoD Directive 4630.1, "Programming of Major Telecommunications Requirements," April 24, 1968
- (j) DoD Directive 5400.11, "Personal Privacy and Rights of Individuals Regarding their Personal Records," August 4, 1975
- (k) DoD Directive 5200.28, "Security Requirements for Automatic Data Processing (ADP) Systems," December 18, 1972
- (l) OMB Circular A-71, Transmittal Memorandum No. 1, "Security of Federal Automated Information Systems," July 27, 1978
- (m) DoD Instruction 4100.33, "Commercial or Industrial Activities - Operation of," July 16, 1971
- (n) DoD Instruction 7041.3, "Economic Analysis and Program Evaluation for Resource Management," October 18, 1972
- (o) DoD Standard 7935.1-S, "Automated Data Systems Documentation Standards," September 13, 1977, authorized by DoD Instruction 7935.1, September 13, 1977
- (p) DoD Instruction 5000.31, "Interim List of DoD Approved High Order Programming Languages," November 24, 1976
- (q) DoD Directive 3020.26, "Continuity of Operations," Policies and Planning," July 3, 1974
- (r) DoD Directive 5010.19, "Configuration Management," July 17, 1968

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LIFE CYCLE PHASES AND POLICIES

A. MISSION ANALYSIS/PROJECT INITIATION

1. The purpose of this phase is to identify a mission element need (set of functional requirements); validate that need; and recommend the exploration of alternative functional concepts to satisfy the need. This phase is completed upon approval of the Mission Element Need Statement at Milestone 0 at a prescribed organizational level and issuance of authority to explore and develop alternative concepts.

2. The following policies apply:

a. The Mission Element Need Statement (MENS) shall be prepared in accordance with enclosure 3 hereto.

b. When feasible, mission needs shall be satisfied through the use of existing DoD Component equipment and resources.

c. Information reporting requirements shall be justified and approved under the provisions of DoD Directive 5000.19 (reference (h)).

d. DoD Component or OSD-directed requirements for standardization, integration, or interface with other automated information systems shall be accommodated. Such requirements will be explicitly identified and documented.

e. Appropriate measures to specify and safeguard vital management and operating information, and assure needed mobility, effectiveness, survivability and continuity of operations in peace and war shall be emphasized. This includes:

(1) Clearly identifying AIS wartime role, if any; and

(2) Designating secure backup facilities or making computers as transportable and as survivable as the principal activities which they support.

B. CONCEPT DEVELOPMENT

1. The purpose of this phase is to synthesize (or solicit) and evaluate alternative methods to accomplish the function shown in the approved MENS and to recommend one (or more) feasible concepts for further exploration. A determination is made whether several alternative concepts should be demonstrated or that demonstration should be omitted.

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a. If demonstration is decided to be necessary, each functional concept selected for demonstration shall be outlined to the point that the function has been bounded and all risks stated. Competitive demonstrations are intended to verify that the chosen concepts are sound, could perform in an operational environment, and provide a basis for final selection of a concept.

b. During this phase, modeling and simulation of various concepts may be necessary to establish feasible functional baselines for further exploration. This phase is completed upon issuance of approval at Milestone 1 at a prescribed organizational level to demonstrate alternative concepts or to proceed directly to definition and design of an AIS based on a selected concept.

2. The following policies apply:

a. A project manager shall be designated during this phase for each major AIS and given authority to manage all aspects of the AIS. A project manager may be reassigned during the Concept Development, Definition/Design or System Development phases of a major AIS only with the express approval of senior functional and ADP officials. This provision is intended to promote continuity, responsibility and accountability.

b. An AIS to be used by more than one DoD Component shall be assigned to a DoD Component designated as Executive Agent and chartered by the Secretary of Defense.

c. Proposed constraints for the conduct of any demonstration and validation activity will be specified for each alternative. The constraints will establish the basis on which to continue or terminate the effort for each alternative through completion of the demonstration.

d. The interface of ADP, telecommunications and other supporting elements shall be recognized as an integral part of the AIS from the outset of planning and analysis efforts. Technical systems concepts, requirements, specifications and costs for communications assets shall be identified and coordinated with appropriate communications organizations during this phase and throughout the life cycle of each AIS in accordance with DoD Directive 4603.1 (reference (i)).

e. Preliminary requirements for the protection of information shall be identified in this phase and refined during follow-on phases. Such requirements shall be in accordance with DoD Directives 5400.11 and 5200.28 and OMB Circular A-71, Transmittal Memorandum No. 1 (references (j), (k) and (1)).

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f. Necessary contractor versus in-house analysis shall be prepared in accordance with DoD Instruction 4100.33 (reference (m)).

C. DEFINITION/DESIGN

1. The purpose of this phase is to define fully the functional requirements (system/subsystem specifications) and to design an operable AIS. This phase is completed when ADP and telecommunications technical adequacy has been validated and upon issuance of approval at Milestone II at a prescribed organizational level to develop fully the system.

2. The following policies apply:

a. Functional requirements and processes to be automated shall be documented and validated by an appropriate senior functional policy official before an AIS design is commenced. As a minimum, the functional documentation shall specify functional operational requirements and a detailed description of the function to be supported by automation.

b. Specific objectives expressed in terms of performance measures shall be established for each AIS project, supported by initial feasibility studies and economic analyses prepared in accordance with DoD Instruction 7041.3 (reference (n)), and refined in follow-on phases.

c. A new AIS may be designed only after it has been determined that an existing AIS, including one available from another DoD Component or off-the-shelf from industry, cannot be used or economically modified to satisfy validated functional requirements.

d. AIS designs shall exploit proven technology.

e. Each AIS shall be constructed in a modular structure providing a direct relationship of each module to the mission/function supported, unless another design technique is approved as more appropriate. As a goal, the overall AIS will be conceived and sized in a manner that will permit the development and evaluation of each module within 9 to 12 months after detailed design of the AIS has been completed. Such practices will contribute to logic visibility, reliability, maintainability, and reduce the risk and cost associated with evaluation and validation.

f. AIS design shall include provisions that will facilitate appropriate functional and technical audit of the AIS.

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g. Requirements for specialized functional and technical training to operate an AIS, including associated time and costs, shall be identified in this time period and updated during follow-on phases. Proper coordination and adequate lead time for implementation shall be provided system users and training organizations.

D. SYSTEM DEVELOPMENT

1. The purpose of this phase is to develop, integrate, test and evaluate the ADP system and the total AIS. This phase is completed upon approval of the AIS by appropriate functional officials as satisfying the mission need; and issuance of approval at Milestone III at an appropriate organizational level to deploy and operate the approved AIS.

2. The following policies apply:

a. Each AIS development shall be supported by documented plans. The scope of ADP system life cycle management documentation shall be appropriate to the resource investment contemplated and consistent with the principles stated in this Directive and in DoD Standard 7935.1-S (reference (o)).

b. Where an AIS must operate under both peacetime and wartime conditions, the development shall provide for immediate readiness and transition from one condition to the other without need for retrofit or redesign.

c. Modern software development concepts such as top down design, chief programmer teams, design walk-throughs and program libraries shall be used wherever practicable.

d. The DoD standard high order programing languages are specified in DoD Instruction 5000.31 (reference (p)). The National Federal and/or DoD specifications for these languages shall be used. The use of specific DoD standard high order languages in AIS shall be based on the capabilities of the language to meet the system requirements as follows:

(1) Nonstandard high order programing languages may be used for classes of applications where, for technical reasons, the use of a DoD standard high order programing language would not be feasible. Such use shall be approved by the DoD Component Senior ADP Policy Official and an information copy of the determination shall be sent to the ASD(C).

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(2) Machine dependent assembly languages may be used when the DoD standard high order programming language does not have the capability to accomplish required functions, and where it would not be cost beneficial to have the capabilities added to the DoD standard high order programming language compiler. Such use shall be approved by the DoD Component Senior ADP Policy Official and an information copy of the determination shall be sent to the ASD(C).

(3) Use of implementer defined features and vendor supplied nonstandard extensions in high order programming languages compilers shall be avoided.

e. A plan for continuity of operations shall be prepared for each AIS in accordance with DoD Directive 3020.26 (reference (q)).

f. Any AIS, including those that will operate at multiple sites, shall be field tested at one (or more) representative operational sites, using actual functional transaction data, and shall be certified for adequacy by appropriate authority covering functional and technical interests prior to operation.

g. All components of the AIS (functional, ADP, and telecommunications requirements) shall be managed as configured items. The terms, tools and techniques contained in DoD Directive 5010.19 (reference (r)) and those developed and approved by DoD Components shall be adopted or adapted for such configuration management of an AIS.

E. DEPLOYMENT AND OPERATION

1. The purpose of this phase is to (a) implement the approved operational plan, including extension/installation at other sites; (b) continue approved operations; (c) budget adequately; and (d) control all changes and maintain/modify the AIS during its remaining life using well defined configuration management procedures.

2. The following policies apply:

a. No AIS shall be made operational, including an AIS to be extended beyond its initial operation test site, without ensuring that the implementation plans, including training and resource availability, are sufficient to support the schedule for operations.

b. Computers designated as transportable field units shall be field tested periodically to assure that they can operate in field environments and that adequate power supplies and transportation support are available.

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c. Each operational AIS shall be reevaluated on a periodic basis to assure that the AIS continues to operate efficiently and to meet functional requirements in a cost effective manner.

d. Prior to upgrading the ADPE of an AIS, the AIS shall undergo a performance evaluation and opportunities for sharing shall be explored.

e. An AIS which no longer serves a significant need shall be expeditiously terminated.

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MISSION ELEMENT NEED STATEMENT (MENS)

A. REQUIREMENT

A MENS shall be prepared to describe in written form a mission deficiency and to justify the exploration of alternative solutions (including automation) of the deficiency. An adaptation of the MENS shall be used for systems not designated as major systems. Since the MENS is a management document, it normally should not exceed 4 to 6 pages in length.

B. CONTENT

1. Mission Area Identification

- a. Identify mission and authority for accomplishment.
- b. Describe the current organizational and operational environment.
- c. Describe the relative priority of the need to other mission needs of the DoD Component.

2. Deficiency

- a. Describe scope of mission deficiency or non-performance. Avoid doing so in terms of the capabilities and explicit characteristics of automatic data processing equipment or of automated information systems.
- b. Describe need in terms of the job to be accomplished and mission results or outcomes to be achieved.

3. Existing and Programed DoD Capabilities

- a. Describe capabilities to accomplish the mission without a new capability.
- b. Assess impact on operations by maintaining status quo.

4. Constraints. Identify constraints that could apply to the exploration and acceptance of alternative solutions to the mission deficiency. These could include such matters as the following:

- a. Operational and logistics limitations, organizational or special considerations.

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b. Interservice, intraservice, and NATO standardization and interoperability requirements.

c. Interface with existing automated information systems.

d. Limits on investment that should/will be placed on the acquisition of the new capability.

e. Limits on recurring or operating costs; or

f. Timing of need.

C. PROCESSING AND COORDINATION

1. DoD Component Heads or their designees will ascertain whether a MENS is required to be submitted to OSD in accordance with the definition of major systems.

2. DoD Components may send a draft MENS to OSD for informal assistance during preparation, if desired.

3. The official MENS will be addressed as follows:

a. To the Secretary of Defense through the Defense Acquisition Executive for those systems which meet the criteria of DoD Directive 5000.1 (reference (b)).

b. To the Assistant Secretary of Defense responsible for the mission area for those systems which meet the other AIS thresholds prescribed by this Directive.

c. To the appropriate organizational level designated by the Head of the DoD Component concerned for those systems which are not designated as major systems.

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NUMBER 7920.2



ASD(C), ASD(MRA&L), ASD(C3I)
Department of Defense Instruction

SUBJECT: Major Automated Information Systems Approval Process

Refs: (a) DoD Directive 7920.1, "Life Cycle Management of Automated Information Systems," October 17, 1978
(b) DoD Directive 5000.1, "Major Systems Acquisitions," January 18, 1977

A. PURPOSE

This Instruction supplements the provisions of reference (a) by establishing the review and decision process and procedures for major automated information systems (AIS).

B. APPLICABILITY AND SCOPE

1. The provisions of this Instruction apply to the Office of the Secretary of Defense, the Military Departments, the Organization of the Joint Chiefs of Staff, and the Defense Agencies (hereafter referred to as "DoD Components").

2. Its provisions encompass only those major automated information systems defined in reference (a), which are below the thresholds established by reference (b).

C. DECISION PROCESS AND RESPONSIBILITIES

1. System Decision Paper (SDP) Process. The successful management of an AIS requires the combined and integrated efforts of functional, ADP and telecommunications organizations and personnel. The SDP process provides for appropriate policy level involvement in key decisions during the life cycle of each major AIS and shall be employed as follows:

a. An SDP shall be prepared following the approval of the Mission Element Need Statement to support DoD Component and OSD reviews, coordination, and decision before continuation of the AIS development. Requirements for the System Decision Paper are prescribed in enclosure 1.

b. After review and concurrence by the appropriate senior policy officials of the initiating DoD Component, the SDP shall be forwarded to the Assistant Secretary of Defense (Comptroller) (ASD(C)) for coordination of OSD review and decision.

c. The OSD decision shall be recorded in the SDP and returned to the DoD Component concerned for action.

d. The SDP shall be maintained in an updated status by the project manager and resubmitted to the OSD at the next milestone.

2. OSD Review and Approval

a. OSD reviews shall be conducted at designated decision points during the AIS life cycle. Life cycle phase milestones and tasks are prescribed in enclosure 2.

b. The OSD review and approval of each major AIS shall be conducted by a group composed of the Assistant Secretary of Defense (Comptroller) (ASD(C)), the OSD system sponsor; the Assistant Secretary of Defense (Communications, Command, Control and Intelligence) (ASD(C3I)); and other OSD principals as identified by the group.

(1) The OSD principal (an Under Secretary of Defense or an Assistant Secretary of Defense) having cognizance over the functional area to be supported by the AIS shall be the OSD system sponsor. Where functional applications cross the functional interests of more than one OSD principal, the one having primary interests shall assume the role of OSD system sponsor.

(2) Normally, the OSD system sponsor shall coordinate the OSD reviews and decisions to proceed into the Mission Analysis/Project Initiation and Concept Development phases; the ASD(C) shall coordinate the OSD review and decision to proceed into the Definition/Design, System Development and Deployment/Operation phases.

c. The DoD Components having direct interest in the AIS shall advise the OSD as requested by the group.

d. A staff member within each of the offices of the OSD system sponsor, the ASD(C), and the ASD(C3I) shall be designated as point of contact for each major AIS.

3. Approval Process Relationships

a. The major AIS approval process complements the programing, planning, and budgeting system (PPBS) by concentrating on key issues related to AIS development progress and on effective OSD reviews at key milestones. Major AIS decisions must fit into the affordability framework of the PPBS where OSD decisionmaking is keyed to the balancing of all programs within established DoD fiscal limits.

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b. Each major AIS shall be submitted as a definitive line in the Program Objectives Memorandum (POM) and as separate ADP budget exhibits.

c. OSD initiatives and objectives for major AIS shall be reflected in the annual Consolidated Guidance Memorandum (CGM) by appropriate OSD principals.

d. AIS review decisions shall be reflected in the Five Year Defense Program (FYDP) at the next scheduled update. This shall be accomplished either (1) during the Program Objectives Memorandum/Program Decision Memorandum process; or (2) during the budget submission process, depending on when the OSD review is accomplished and the related decision is made.

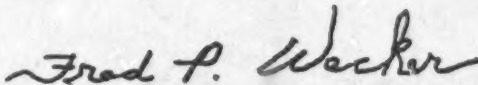
e. In cases where a POM or budget submission to OSD deviates significantly from a previous AIS decision, this fact, including cost/schedule performance impact, shall be noted and explained.

f. Each SDP affected by an approved program or budget decision shall be updated within 30 days, referencing the appropriate decision document.

4. Waivers. Specific system circumstances may dictate the need for DoD Components to deviate from the procedures prescribed herein. When appropriate, the Head of the DoD Component concerned may request a waiver of particular requirements of this Instruction from the Assistant Secretary of Defense (Comptroller), citing the circumstances that justify such waiver.

D. EFFECTIVE DATE AND IMPLEMENTATION

This Instruction is effective immediately. Forward two copies to the Assistant Secretary of Defense (Comptroller) within 120 days.



FRED P. WACKER
Assistant Secretary of Defense
(Comptroller)

Enclosures - 2

1. System Decision Paper
2. AIS Milestone & Tasks

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SYSTEM DECISION PAPER

A. The System Decision Paper (SDP) supports the OSD and DoD Component decisionmaking process during the development of an AIS. It is the principal document for recording the essential information on the AIS; such as mission need, concept, milestones, thresholds, issues and risks, alternatives, cost/benefits, management plan, supporting rationale for decisions; affordability in terms of projected budget and out-year funding; and the decisions made by the OSD.

B. The SDP shall contain the data pertinent to the life cycle phases prescribed in DoD Directive 7920.1 (reference (a)) and in enclosure 2.

1. The SDP shall be submitted for each major new AIS or major modification to a deployed AIS. As the major project evolves, the functional, ADP, and related telecommunications plans submitted in the SDP shall comprise the full AIS life cycle planning. The SDP shall include an alternative plan to minimize operational risk of system failure if automation objectives are not achieved.

2. The SDP shall focus on the particular life cycle phase of the AIS, related issues and the specific decision needed. Depending on the milestone involved, it shall contain:

a. The approved Mission Element Need Statement (MENS) (as an annex) and current information updating the MENS (as a cover sheet to the MENS annex).

b. Project management structure and plan annex.

c. An annex summarizing the acquisition strategy.

d. Logistics and training support annex, if appropriate.

e. Resources annex which shall include a cost/benefit analysis of the AIS life cycle when initially developed, and shall be gradually refined and updated as the AIS progresses through its milestones. The annex shall perpetuate the record of previously allocated DoD Component resources and indicate any changes to previous estimates for the AIS.

f. Test and evaluation plan annex and up-to-date status changes.

3. The SDP shall be prepared and updated by the DoD Component functional initiator if a project manager has not been designated.

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4. During the OSD coordination of the SDP, key issues shall be clearly defined. Conflicting viewpoints shall be summarized and documented. The SDP shall be endorsed to reflect OSD review results, recommendations and decisions.

5. The SDP shall remain in existence throughout the life of a major AIS.

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AUTOMATED INFORMATION SYSTEMS MILESTONES AND TASKS

A. MISSION ANALYSIS/PROJECT INITIATION

1. The purpose of this phase is to identify a mission need (set of functional requirements); validate that need; and recommend the exploration of alternative functional concepts to satisfy the need. This phase is completed upon approval of the Mission Element Need Statement (MENS) at Milestone 0 and issuance of authority to explore and develop alternative concepts.

2. The MENS shall be prepared and processed for approval in accordance with DoD Directive 7920.1 (reference (a)).

3. Milestone 0 Decision. Approval of the MENS by OSD permits the DoD Component to proceed to identify alternative concepts to satisfy the functional need.

B. CONCEPT DEVELOPMENT

1. The purpose of this phase is to synthesize (or solicit) and evaluate alternative methods to accomplish the function shown in the approved MENS and to recommend one (or more) feasible concepts for further exploration. A determination is made whether several alternative concepts should be demonstrated or that demonstration should be omitted.

a. If demonstration is decided to be necessary, each functional concept selected for demonstration shall be outlined to the point that the function has been bounded and all risks stated.

b. Competitive demonstrations are intended to verify that the chosen concepts are sound; could perform in an operational environment; and provide a basis for final selection of a concept. During this phase, modeling and simulation of various concepts may be necessary to establish feasible functional baselines for further exploration.

c. This phase is completed upon approval at Milestone I to define and design an AIS based on a selected concept.

2. The tasks to be completed prior to Milestone I and addressed in the SDP submitted for that decision are:

a. The mission need is reaffirmed to be essential.

b. A project manager has been appointed and chartered, and necessary staffing approved.

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c. The alternative system design concepts adequately reflect a broad segment of the technology base and provide an acceptable competitive environment.

d. Functional objectives have been prioritized.

e. Detailed functional descriptions (inputs, processes, outputs and interfaces) have been developed and validated.

f. The alternatives recommended for demonstration satisfy the mission element needs.

g. The projected resource investment for the selected alternatives are estimated and are consistent with the stated constraints.

h. Preliminary plans adequately describe a concept for training, logistical support, organizational relationships and, if appropriate, operation of an automated system.

i. Use of available and existing Government and commercial hardware and software is adequately considered.

j. The acquisition strategy effectively integrates the technical, business and management elements of the project and supports the achievement of project goals and objectives.

k. Joint Services considerations are adequately treated in the planning.

l. Standardization and interoperability requirements have been adequately considered.

m. Risk and uncertainty areas are identified and adequately treated in the planning.

n. Strategies to facilitate the transition of the current functional system to any of the alternative systems to be explored have been conceived.

o. Configuration management discipline has been established for control of functional requirements.

p. Electronic countermeasure performance requirements have been identified.

q. Planning for preparation of a test and evaluation plan is adequate.

3. Milestone I Decision. OSD considers the updated SDP to ascertain the adequacy of planning and determines

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whether to proceed to definition/design of an AIS based on a single concept.

C. DEFINITION/DESIGN

1. The purpose of this phase is to define fully the functional requirements (system/subsystem specifications) and to design an operable AIS. This phase is completed when ADP and telecommunications technical adequacy has been validated and upon issuance of approval at Milestone II to develop fully the system.

2. Tasks to be completed prior to Milestone II and addressed in the SDP submitted for that decision are:

- a. The mission need is reaffirmed.
- b. The functional system design has been revalidated and the baseline for the functional system has been updated.
- c. AIS specifications for hardware, software and data bases have been developed.
- d. Plans for logistics support, training, operational test and evaluation, configuration management, organizational relationships, development and acquisition have been updated.
- e. Risk analysis to reflect the total AIS development has been reassessed.
- f. A thorough and complete economic analysis has been prepared.
- g. A configuration management discipline for the total AIS has been established.
- h. Computer acquisition plans to obtain the required automatic data processing equipment (ADPE) and other resources are finalized.

3. Milestone II Decision. OSD reviews the updated SDP to ascertain the (a) general progress of the project; (b) overall completeness and adequacy of the AIS design specifications; (c) thoroughness of the various planning documents; and (d) updated risk and economic analysis. OSD approval at this point permits full scale development of the ADP system.

D. SYSTEM DEVELOPMENT

1. The purpose of this phase is to develop, integrate, test and evaluate the ADP system and the total AIS. This

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phase is completed upon approval of the AIS by appropriate functional officials as satisfying the mission need; and issuance of approval at Milestone III to deploy and operate the approved AIS.

2. Tasks to be completed prior to Milestone III and addressed in the SDP submitted for that decision are:

- a. The mission need is reaffirmed.
- b. Computer programs and data bases have been fully developed.
- c. Standardization and interoperability requirements have been satisfied.
- d. System support documentation has been developed. This includes maintenance manuals, user manuals, and operation manuals.
- e. Unit and system(s) level test and evaluation results support a decision to proceed with deployment.
- f. The results of the functional configuration audit, the physical configuration audit, and the product verification review have been evaluated; all support products (e.g., users manual, maintenance manual) have been reviewed.
- g. An intensive internal review has certified that the developed AIS satisfies the AIS design and functional requirements.
- h. Life cycle schedule, cost and budget estimates are realistic and acceptable.
- i. The system is cost effective and affordable and remains the best alternative.
- j. Trade-offs have been made to balance cost, schedule and performance effectively.
- k. The acquisition strategy has been updated and is being executed.
- l. The end products of development are controlled as configured items.
- m. Business planning supports the acquisition strategy and provides flexibility for delivery rates and quantities when options are used.

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n. Issues concerning delivery, quality assurance and facilities are identified and managed satisfactorily or resolved.

o. The project management structure and plan are sound and adequately supported.

p. Planning for deployment is adequate including manpower and training, logistics readiness, operational considerations, and integration with existing operational systems.

3. Milestone III Decision. OSD reviews the updated SDP and determines whether the developed and tested AIS is ready to be deployed for operation at the operating site(s).

E. DEPLOYMENT/OPERATION

1. The purpose of this phase is to (a) implement the approved operational plan, including extension/installation at other sites; (b) continue approved operations; (c) budget adequately; and (d) control all changes and maintain/modify the AIS during its remaining life, using well defined configuration management procedures.

2. System Effectiveness Milestone(s). Reviews shall be conducted by the DoD Component concerned, with OSD participation if required at convenient time periods after the first year of full system operation. The intent of the periodic reviews is to determine if the system effectively serves its users, to identify potential obsolescence, and validate/certify continued need for the system. As found necessary, action will be taken to phaseout or terminate in a manner that will not adversely affect the supported mission or other systems that interface with the automated information system.

Chairman SIMPSON. And now, please, Dr. Lewis.

**TESTIMONY OF DR. THOMAS L. LEWIS, ASSOCIATE DIRECTOR
FOR INFORMATION SYSTEMS, THE CLINICAL CENTER, THE NA-
TIONAL INSTITUTES OF HEALTH**

Dr. LEWIS. Thank you, Mr. Chairman.

I would like to briefly summarize the experience of the National Institutes of Health over the past 7 years in implementing and operating a large scale computer based medical information system to support patient care and clinical research at our hospital.

The applications include the full range of patient care and support services including in medication orders, reporting, laboratory test results, radiology, nuclear medicine, nursing, and so forth.

It is a pleasure to comment on our management strategy. Normally we are asked to give very detailed technical discussions of the ins and outs of computer systems. We feel that our approach to the management has been at least coequal in our successful implementation.

The computer technology to support patient care, clinical research, and hospital management, has been introduced in a gradual structured fashion using a small team of multidisciplinary professionals to assist clinical center department heads.

Typically the team includes physicians, industrial engineers, computer scientists, administrative staff members, and others, who work very closely with the department heads for needs assessment, staff educational mode, and the introduction of technology.

To really rapidly review our experiences, let me stress several features. The first step, in 1973, was an impact study to determine what the effect on the hospital would be of the introduction of significant new technology. We were interested in assessing the state of the art of existing systems at that time, determining hospital needs, and educating hospital staff to the characteristic of such systems, since many people have many different ideas about what a computer is, and how well it might work.

We were also interested in assessing both positive and negative aspects of the technology. I think that in many instances studies tend to focus only on the positives which often causes subsequent problems.

I might mention as an aside that these studies can be relatively simply and easily done. They do not necessarily take years and years. Our study was done with 4 or 5 people over a 6-month period. It really involved interviews, discussions, and short reviews with nearly everyone in the hospital involved in the direct delivery or support of patient care services.

Major conclusions of the study were: One, an ongoing group to handle planning, coordination, and the management was essential; two, we needed to develop system specifications with the support of all of the affected hospital organizations; and three, we should emphasize an evaluation of operational systems. By reviewing operational systems, we could verify the capabilities and the applicability of such systems to the clinical center.

Echoing some of the comments of Commissioner Carr, we developed a functional request for proposals. The specifications were re-

lated to the hospital needs. No hardware or software characteristics were specified in the requirements. The evaluation team was drawn from the hospital staff who had participated at the hospital department level in the initial impact study.

Subsequent to an award, we continued the implementation using the same combination of the management team and the hospital staff committee. This was very important subsequently for problem solving during the implementation process. This management team approach facilitated the education of our staff. It was important to educate technical computer people in the characteristics of hospitals and how they operate. Educating the medical, nursing, and other hospital staff to the appropriate expectations of technology was also essential.

In this way we were able to foster cooperation rather than an adversarial situation. As Colonel McGinnis mentioned, we also had an evaluation plan built into the implementation from the beginning. I think that with this kind of system, if they are going to be successful, you cannot avoid evaluation. You are constantly being evaluated by yourselves, by your peers, by other members of the hospital, and not infrequently by visitors from other health-care facilities.

We held a more formal internal mini-evaluation at the completion of our inpatient evaluation, and a more extensive outside evaluation subsequently.

I think that the relevance of our experience, to summarize briefly, is that: One, we had a management approach in our hospital which allowed us to define, select, install, and evaluate our technology efforts; and that two, installation is complex, time consuming, risky, and requires stable support for patient care applications.

If you look at the field today, there are relatively few hospitals with complete installations. This is true on a worldwide basis, not just in the United States. I feel that it is important to apply the experience of successful implementations. Particularly with reference to the Veterans' Administration, it is appropriate to attempt to propagate successes rather than failures. It is important to have a setting in a single hospital that can be demonstrated and that can be well understood.

There are also a number of myths and paradoxes which are described in more detail in the written testimony. I would like to emphasize that there is no magic computer language. There is no magic hardware configuration. While the concepts of distributed data bases and so forth are well worth discussing from a technical side, it is important not to lose sight of the hospital needs and objectives by overemphasizing the controversy.

Chairman SIMPSON. If you could summarize, it would be very helpful.

Dr. LEWIS. We would certainly extend an invitation to the committee to come to NIH. We are nearby, and we can demonstrate what we have done, including some of our own limitations as well as successes. An indepth review of existing systems and experiences is the best way to progress in the medical information systems field.

Chairman SIMPSON. Thank you, very much for your very candid and helpful testimony. We appreciate that.

[The prepared statement of Dr. Thomas L. Lewis, Associate Director for Information Systems, The Clinical Center, National Institutes of Health, and NIH's response to written questions submitted by Hon. Alan Cranston, ranking minority member of the Senate Committee on Veterans' Affairs, follow:]

PREPARED STATEMENT OF DR. THOMAS L. LEWIS, ASSOCIATE DIRECTOR FOR INFORMATION SYSTEMS,
THE CLINICAL CENTER, NATIONAL INSTITUTES OF HEALTH

INTRODUCTION

The Clinical Center, National Institutes of Health, has been involved in applications of computer systems to patient care and medical research since the early 1960's. During the past 20 years, many people here and elsewhere have been fascinated by the apparent power of computer systems to improve the quality of patient care, clinical medicine, and medical research. Applications have covered a broad spectrum including hospital and professional billing operations; simple in-patient and outpatient record keeping systems; isolated applications such as stand-alone pharmacy systems, laboratory systems, radiology systems and medical records systems; physiologic monitoring systems in intensive care units; electrocardiogram analysis systems; sophisticated hospital accounting and financial management systems with features ranging from the third party insurance proration through employee pension fund management; large complex hospital patient care systems designed to automate, streamline, and control the costs of patient care services; complex statistical and mathematical modeling systems for biomedical research; physiologic and pharmacologic models to assist physicians in diagnostic decisions, such as acid-base modeling systems and programs to calculate the proper dose of digoxin for a patient with heart disease or antibiotics for patients with varying degrees of renal or hepatic malfunctions; and computer-assisted diagnosis models using Bayesian analysis, linear discriminant analysis, clustering methods, and other statistical techniques to develop a probability-ordered list of probable diagnoses given a set of signs or symptoms. In addition, computer systems are used now in diagnostic radiology for tomographic scans and in Nuclear Medicine to perform non-invasive cardiac imaging for routine patient care studies which were undreamed of several years ago. New techniques like positron emission tomography and nuclear magnetic resonance show great promise in going beyond the CT scanners by incorporating physiologic as well as anatomic data for the physician. Of course, the "standard" uses of computers in biomedical research are similar to those of the basic sciences including classical mathematical, statistical, and engineering techniques.

- 2 -

While there have been many successful applications of computer systems to patient care, the medical landscape is also littered with the carcasses of failed systems, over-optimistic estimates, prototype systems that could not be "scaled-up" to the size required to perform a task reliably and economically, and theoretically sound systems that clashed with the realities of medical care requirements. Technical problems caused some failures. Other systems established the potential value of computer techniques but did not become practical until the advent of larger capacity, faster, smaller-sized, less expensive computer equipment. Still other medical computer applications have failed because of poor planning, inadequate assessment of organizational and individual needs, lack of follow-through, shortage of committed staff, failure to periodically evaluate current needs versus capabilities, or failure to plan for the evolution of a current system to meet future anticipated and unanticipated needs. The following sections describe the Clinical Center's approach to the management of sophisticated technology in a hospital setting, with particular emphasis on the selection, installation, operation, and evaluation of a hospital-wide, medically-oriented computer-based medical information and communication system.

DESCRIPTION OF CLINICAL CENTER

A brief description of the salient characteristics of the Clinical Center will help place its medical computer applications and technology management in context. The Clinical Center is a 541-bed research hospital organized to support the inpatient and outpatient clinical research programs of the ten institutes of the National Institutes of Health and the National Institute of Mental Health involved in clinical research studies of human diseases. There are approximately seven thousand inpatient admissions and eighty thousand outpatient visits per year. The average inpatient stay is approximately 16 days with a significant percentage of long-stay patients in mental health programs where hospitalization in excess of one year is not uncommon. Ancillary services in the Clinical Center are similar to those of other large hospitals and include Diagnostic Radiology, Nuclear Medicine, Clinical Pathology, Rehabilitation Medicine, Nutrition, Nursing, etc. The medical staff is derived from the various designated research institutes such as the National Heart, Lung and Blood Institute, the National

Institute of Allergy and Infectious Diseases, and the National Cancer Institute. The medical staff organization reflects these institute research functions. Therefore the hospital inpatient and clinic units are divided according to disease, such as a nursing unit for neurology patients, another nursing unit for studies involving various forms of arthritis, and so forth, as opposed to organization by medical specialty such as medicine, surgery, orthopedics, ENT, or pediatrics. Certain diseases are studied intensively, such as cancer and heart disease, while other medical conditions such as appendicitis, gall bladder disease, urologic problems, or obstetrics are not being studied at this time. Decisions about the types of diseases and patients to be studied are made based on potential research benefits, and the legal mandates in the charter of the National Institutes of Health. All patients must be referred by their personal physician. This is to insure not only the appropriateness of referral but to provide the continuity of care subsequent to any diagnosis or treatment received at the NIH.

In summary, the Clinical Center is unusual in that our patient population differs quantitatively from most other hospitals in terms of the types and frequency of diseases treated. Research into the diagnosis and treatment of both common and unusual diseases is conducted, and patients are seen from around the world. However, the Clinical Center is very much like all other hospitals in that it provides many of the same clinical care services, must respond to the medical care needs of patients, and must function in most ways like all other hospitals. With this brief description of the Clinical Center as background, let us review the characteristics of the Clinical Center Medical Information System, the major medical computer application in use at the Clinical Center to support patient care and medical research.

MEDICAL INFORMATION SYSTEM OVERVIEW

The Clinical Center Medical Information System (COMIS) is a system whereby all the services for all the patients in the Clinical Center are ordered by physicians and their agents and in which virtually all of the clinical findings and observations based on these orders are recorded. On a function-by-function basis, the MIS accomplishes recording, communication, documentation, and archiving of records, all of which were accomplished previously using mostly manual operations. Computerization was envisioned to address the issues of: accuracy/completeness/legibility of physician orders, observations, and results charting; timeliness of order and result transmission; ease and control of current patient data access; input into a computer-based research data base system; reduction or elimination of paper forms including the need to inventory and distribute these; and utilization of manpower in information handling. The main elements of the system are the central computer hardware and peripherals, computer switching equipment and communication gear located in the Clinical Center; and 150 CRT (Cathode Ray Tube) terminals and 70 printers located throughout the clinical service departments, clinics, and nursing areas. The users of the system are the clinical care and research physicians, registered nurses and nursing support personnel, technologists, and clerks in the clinical support departments, administrative personnel, and clinic personnel. The total number of trained users for the system at the present time is approximately 2,000.

The general operation of the system is as follows. When a patient is admitted to the Clinical Center the admission is processed by the computer via an admission clerk's entry into a CRT in the Admissions Office. The computer then sets up an electronic record which is used throughout the patient's stay. Physicians enter orders for diagnostic tests, therapy, and consultations using a CRT terminal located in the nursing station or in the physicians' office area on the nursing floors.

Nurses enter the observations of patient vital signs, the administration record of medications and intravenous therapy, and virtually all other activities and plans which are part of the nursing function with regard to patient care and research. Consultations performed by Clinical Center service departments and determinations made in the laboratory are recorded using CRT terminals and this information is then made a part of the patient's computer record as well. The physician, nurse or other medical professional who has a need to review the patient's medical data during the patient's active status may retrieve the information using the CRT terminal. During the normal work day, at any given time, 50 to 75 CRT's are in simultaneous use. There are peak periods of the day and slow periods as well. The devices are placed to maximize the convenience of the physicians and other medical professionals in carrying out their care and research missions. The printers are used to create both temporary and permanent documents. Temporary documents include those which are used for the moment or to document system activity which will later be summarized on a permanent document. For example, copies of new medical orders are generated immediately at the patient location so that there is an instant audit trail should the system become unavailable. Similarly, hourly "medications due lists" serve as "tickler files" to remind the nurses when to perform tasks. Emergency and priority laboratory results are printed at the instant of their certification by laboratory technicians. At the end of the day permanent medical record chart summaries of medications given are printed; laboratory results determined, and all medical orders for the day are produced. Other permanent documents include the consultation reports on X-rays, Nuclear Medicine, Encephalograms, etc., as well as summaries of vital signs, intake and output and all other nursing activities. In addition, the system stores and releases at the appropriate time specimen pickup documents for laboratory tests so that the number of phlebotomies and the amount of blood drawn from patients are minimized.

Five days after the patient's discharge, or in the case of outpatients, 30 days after the recording of the last result in the COMIS, the patient's record is copied from the on-line disk storage to magnetic tape. A copy of this tape, known as the "PURGE tape" is sent to the NIH Division of Computer Research and Technology (DCRT) for inclusion of all COMIS acquired patient data in the Clinical Information Utility data base. The latter data base is rapidly becoming an indispensable part of the clinical research process at the Clinical Center. The acquisition of the content of more than 12,000 medical orders, more than 20,000 vital signs, 30,000 medication administration records, and more than 30,000 clinical laboratory results each week are provided to DCRT in computer processable form as a by-product of the patient care process. This provides the researchers with a readily accessible but extremely secure data base for their investigations.

Several other clinical care systems are in use at the Clinical Center, including a Clinical Pathology laboratory computer system that gathers patient laboratory results directly on-line from analytical instruments and is in turn directly connected to the COMIS. Applications in the Medical Intensive Care Unit and electrocardiogram processing are also used. In addition, extensive data analysis for research and patient care is performed by the NIH Division of Computer Research and Technology both directly and through data derived from Clinical Center systems.

PRE-ACQUISITION STUDIES

The Clinical Center approach to the management of sophisticated technology in a medical setting is well illustrated by following the evolution of the Clinical Center Medical Information System. The Clinical Center Medical Information System is complex not merely because of its complex technology but because it involves the entire human spectrum of man-machine interaction in an often stressful, high demand, high expectation environment. Interaction with the system must be reliable, fast, useful, easy to learn, and not inhibit medical care. In addition, essentially 100% availability or "uptime" is required; data must never be lost, and the system must handle all tasks expected of it. For example, a system must handle 100% of a physician's orders, not just 85%, or 95% or even 99%. A brief description of the Clinical Center approach follows. Detailed references are included at the end.

The Clinical Center conducted an extensive survey of state-of-the-art hospital computer systems in 1965 and found no system fast enough, flexible enough, economical enough, or successful enough to warrant installation at that time. This observation is significant in that it reflects the often overlooked problem that medical computer applications are frequently acquired because "something can be computerized", not because that "something" has an intrinsic, tangible, measurable benefit to the institution. During the period 1966-1973, the Clinical Center staff with DCRT assistance developed several small-to-medium applications of individual merit and utility which additionally introduced other hospital staff to the characteristics - both positive and sometimes negative - of medical computer systems.

In 1973, a joint Clinical Center-DCRT task force identified four alternatives for meeting Clinical Center needs using computer technology:

- (a) do nothing other than "keep informed",
- (b) begin to design and program an "in house" system,
- (c) acquire a commercially available system, or
- (d) conduct a study of the impact of such a system on the Clinical Center before reaching a definite decision to wait, develop a system, or acquire a system.

Alternative (d) was selected and an impact study was conducted in 1973-74. Full details of the study are contained in reference (1). A summary of the objectives, scope, time frame, method, and staffing are included here. The impact study was completed in six months by a five member team from the Office of Clinical and Management Systems (OCAMS). OCAMS' purpose was to assist in the accomplishment of the Clinical Center mission by providing staff services of systems analysis, computer systems evaluation, and management engineering.

Three factors are significant about this organizational structure. First, the purpose of OCAMS is to assist in accomplishing the Clinical Center mission. Second, with computer scientists, physicians, and industrial engineers on the same team, no special problem solving technique or strategy was given priority over another without justification. For example, staff training and organizational change might be preferable to technology introduction for certain classes of problems. Third, the same OCAMS team was involved in other management studies and problem resolution, enjoyed the confidence of Clinical Center department heads, yet reported to the Director of the Clinical Center to insure consistent planning, policy, implementation, and follow-through.

In designing the impact study, special attention was given to definition of a computerized medical information system in terms that all participants could understand. In 1973, this was a challenge since no systems were as advanced as that required by the Clinical Center. Definitions and demonstrations are easier today but no less important for similar "impact study" evaluations in 1982. The study had numerous objectives (see ref. 1). The most significant observations for this discussion are:

- (1) the study reviewed negative as well as positive aspects of a computer system in a hospital, and
- (2) staff education was provided for those who might use or participate in planning or installation of high technology hospital systems.

Too often the negative aspects of medical computer systems are deliberately not studied or the findings ignored. It is difficult enough to implement high-technology man-machine systems without introducing known or identifiable problems. In retrospect, the emphasis on staff education during the pre-installation impact evaluation study returned the largest dividend. In those areas where education was well done and staff receptive, subsequent system installation

proceeded relatively smoothly, even though we had no notion at the time of the education that a medical information system would in fact be installed. The converse is also true: where staff education was poor, incomplete, or the audience unreceptive, installation problems were more severe.

It should also be noted that studies of this type need not be exhaustive (or exhausting) to obtain adequate guidance. Five staff members, working half time for six months, were able to do a semi-quantitative evaluation using a mixture of medical chart review, group presentation and discussion, time-study measurements, personal interviews, sampling, work counts, and departmental estimates of impacts of various different proposed computer capabilities. Conclusions and estimates derived from the impact study turned out to be remarkably accurate based on subsequent COMIS implementation and use.

In emphasizing the Clinical Center approach to medical computer system technology management, selected Impact Study conclusions should be emphasized. First, the Office of Clinical and Management Systems was assigned the role of planning, coordination, on-going management, specification preparation, and possible installation. Second, specifications were to "be developed with the support and involvement of all affected ... organizations." Third, was that emphasis be placed on evaluating known systems, with established, verifiable capabilities, for their applicability to the Clinical Center needs. Special emphasis was placed on the technical feasibility and cost of adapting such systems to meet known and unknown future needs. The combination of a senior management coordination team structured to meet the hospital needs articulated by senior hospital departmental staff is a model effectively used by the Clinical Center. The combination of the acquisition of existing working systems with the potential for local customization has also proven effective in our setting.

SYSTEM PROCUREMENT, INSTALLATION, AND EVALUATION ACTIVITIES

The next step in our CONIS plan was the development of a functional specification in the form of a Request for Proposals (RFP). Again, the specifications were developed in conjunction with affected hospital staff. By functional, we mean that the specifications related to actual hospital functions such as medical order processing, admission clerk functions, X-ray reporting, and so forth. We did not specify computer type, size, or speed; programming language; CRT type, or other "physical characteristics". Evaluation criteria were developed relevant to actual hospital functioning and needs.

Evaluation of proposed systems was again done by a team of hospital members who would be committed to successful installation and operation. It was still deemed important that guidance from a skilled, multidisciplinary team was necessary to address such issues as staff training, implementation strategy, technology assessment, contract issues, and management. Again, continuity of staff, function, and approach was stressed. This relationship became even more important as evaluation continued and a consensus had to be reached. Relative benefits are difficult to assess; in the real world, not all desirable goals can be achieved at once. In some cases separate individual needs may be mutually exclusive and a priority judgement must be made. In our own case, the choice of systems was narrowed down to two options: select one bidder, or reject all bids and await a further advance in technology. The hospital director and a small, additional review team made the decision to proceed.

The system implementation strategy was a continuation of the earlier management team - hospital staff representative approach. Each department had one or more representatives on the implementation team so that the countless interdepartmental interactions could be identified, discussed, and resolved. It should be noted that while almost all problems could be resolved by the implementation group, some problems required senior management decisions because of implications for staff, space, budget, hospital policy, or regulations. This interaction of line managers, senior managers, and technical staff working in a problem solving mode comprised a very effective management implementation team. It was here that the system selection criteria emphasizing flexibility, adaptability, and enhancement characteristics became important. The ability to meet unforeseen needs economically and rapidly was essential to successful system use.

Education and training of Clinical Center staff, including the development of training guides and problem solving assistance was also the responsibility of the multidisciplinary implementation team. This continued interaction of a full-time hospital-based implementation staff with their peers and co-workers in the service departments reinforced learning, facilitated problem solving, and immediately brought system deficiencies to the attention of those charged with correcting the problems. This helped prevent an "us-versus-them", "the computer is OK, you're not" attitude from developing.

System evaluation efforts began early and informally, progressing to a formal "in-house" mini-evaluation after inpatient implementation and a more extensive outside evaluation performed after the complete system was in place. The mini-evaluation involved selected departments and led to a variety of improvements and adjustments. The outside evaluation was designed to gather detailed quantitative, experiential, qualitative, and cost-benefit information for future planning, for improvements, and for dissemination to the hospital community. The same approach of total hospital involvement with senior hospital management guidance proved effective in the post-implementations evaluation as well.

RELEVANCE OF CLINICAL CENTER EXPERIENCE

The discussion above has focused on the medical computer applications for a given hospital - defining, selecting, and installing a system, and conducting an evaluation. Emphasis was placed on the management aspects of our experience in order to assist the Committee on Veterans' Affairs in their inquiry. In extending our management planning for automated data processing systems to multiple hospitals, several observations are relevant. The first observation is that installing appropriate systems even in a single hospital is a complex, time consuming, somewhat risky activity even at the present time. There are perhaps only 50 such "complete" systems presently installed world-wide, even allowing for systems that many would regard as only "partial". In the rapidly evolving and highly complex medical information system field, it is in fact difficult to define the concept of a complete system with any degree of precision. Many hospitals have some form of data processing support. Few have progressed very rapidly to date. Therefore, it is especially important to analyze and apply the experience of those hospitals with successful implementations so that other groups may benefit.

The Clinical Center is in some respects analogous to a multi-hospital setting. With inpatient services provided for the 10 separate institutes with clinical research activities, a broad spectrum of medical care requirements must be met. This includes Surgical, Medical, Oncology, Cardiology, and Metabolic, Infectious Disease, and Neurology Services. Separate institute research protocols, medical staff, and clinical care requirements all housed in one building lend the flavor of a "multi-hospital setting" to our activities. Obviously the Veterans Administration is faced with additional problems such as geographic dispersion of their hospitals, the complexities associated with managing the world's largest hospital system, and the varying characteristics of individual hospitals. Nonetheless, many of the Clinical Center experiences are probably relevant to their problems as well.

The first observation would be that if computer systems do not assist in medical care delivery effectively in one hospital, the applications cannot be extended to other hospitals. The objective is to replicate success, not failure. Second, our concept of a small, multidisciplinary, problem-solving team designated to work with key hospital staff members to review departmental needs is probably also applicable to the Veterans Administration System. Monolithic central control has the drawback of excessive distance from the "real world" of the hospital and an insensitivity to the problems of individual hospitals. Conversely, service oriented hospital staff often do not have the time, background, or experience to make appropriate overall judgements as to needed technology, the overall range of options, or the choices available to them. This is particularly true in areas where high technology must be used but must be reliably integrated into a hospital setting with due allowance for continuity of operation, reliability, backup, and so forth. In comparing the Veterans Administration Hospital computer system with commercial medical information system activities, I think the following analogy is appropriate. A commercial firm provides a product designed to meet a certain medical application or set of applications in a reliable, hopefully cost-effective, sustainable system. The developer has given appropriate weight to user training, system reliability, system evolution, choice of hardware and software, and all the other "service and utility" functions that are required before the medical applications can be used. Many hospitals may buy such a system for their own specific needs. The system may be used in different ways by different hospitals, may be adapted to meet specific needs in different ways, and may evolve rather differently over time in different clinical settings. Nonetheless the primary

system developer continues to provide the stability, support, and continuity for all such sites. This is generally a constructive mix of central, stable support with individual user applications.

The selection, applicability, characteristics, and features of the system are essentially determined by client hospitals while the basic system underpinnings were designed and developed to meet those needs by a central group charged with continuing system support. Neither is dominant and neither can succeed without the other. In the commercial setting, a product that does not meet hospital needs fails in the marketplace. Similarly, a hospital that cannot effectively assess its own needs or manage its own medical computer applications, will not be able to successfully implement an available medical computer application regardless of its technical merit. It is in fact easy to find multiple instances where a particular medical computer application works extremely well in one hospital and poorly in another. This aspect of needs assessment, implementation strategy, and on-going management is relevant for the Veterans Administration hospitals as well.

I think it is worth emphasizing several of the myths, paradoxes, prejudices, and seductive irrelevancies prominent in discussions in the application of computer systems to medical care. The first observation is a truism along the lines that "easy things are easy and difficult things are difficult". There is no magic to computer applications in medicine as some would have you believe. There is no magic computer language that makes all problem-solving easy. There is no magic hardware configuration that gives all benefits with no liabilities. Current controversies include the benefits versus liabilities of the MUMPS computer language versus other languages, the efficacy and cost benefits of "distributed" versus "central" computer hardware configurations, the benefits of data base languages, and "modular" system development. All of these concepts have merit; however excessive discussion tends to obscure the significant issue which is the assessment of hospital needs, the ability of different types of technology to effectively meet those needs, and the mechanism for achieving success. At the Clinical Center the concept of identifying functional requirements and specifications has helped cut through the ambiguity and confusion generated by overemphasizing philosophy and ignoring practical, functional needs.

An additional argument concerns the use of commercially available versus "homegrown" systems. At the Clinical Center the best results have come from identifying needs and selecting the most appropriate commercial system to meet those needs, taking into consideration the need for future change and selecting systems in part based on the ease of future changes, the cost of enhancements, and the staff required to maintain and support a modified system. This approach has been extremely cost-effective for us and is a key reason for our ability to install and later maintain systems that continue to meet hospital needs.

It is also important to distinguish different types of medical computer applications. The biggest distinction is between what might be called "production patient care requirements" and their supporting systems versus localized specific systems to meet special or limited needs. For example, the requirements of a small computer system to facilitate the management of a small set of patients in a speciality clinic with a limited medical staff are very different from the requirements of a system to permit the ordering and recording of medications for all patients in a large hospital, encompassing physician, nurse, and pharmacy entry, printing of documents for the medical record, and the associated legal and medical characteristics. This again relates to the issue of "easy things are easy and difficult things are difficult".

The problem of centralized versus decentralized decision making for highly complex medical computer applications is not easy to solve. The medical care delivery team in an individual hospital needs access to all the expertise in technology, high technology management, education, and state-of-the-art developments that it can possibly obtain. A central management group must be oriented towards problem-solving, user service, and be receptive to meeting the needs of individual hospitals.

The management of large-scale computer systems is a complex task. The relative plausibility of such systems on a world-wide basis attests to the difficulties, the risks, and the frequent failure of such activities. In this context the concept of centralized versus decentralized implementation can be oversimplified. While many individual small medical computer applications and systems exist, the number of hospitals with installed, operational comprehensive medical computer applications probably numbers well under 50 world-wide. In addition, there are probably under 100 individuals world-wide who have been extensively involved in the design, implementation, installation, operation, and thorough evaluation of existing or potential systems. Undoubtedly more money has been lost than made over the years. The combination of the few successful systems, the limited expertise available, and the ambitious plans of the Veterans Administration for introducing computer systems to support their medical care mission would suggest that the problem is not simply one of decentralized versus centralized solution. The experience and contribution of all involved parties is required. For example, success depends in part on a central, stable work force who understand the design and general system capabilities and who are committed to on-going support. Individual hospitals represent the true system users who ultimately must determine the specific system capabilities which they need, the mode of operation, and the utility, disutility, success, or failure of the system. Further, the central support group must be involved and responsible for problem-solving and the day-to-day operation of the system if it is to be successful. The data processing group cannot wash its hands of the hospital nor can the hospital expect to be omniscient in the subtleties of computer technology as well as the requirements for hospital service delivery. Admittedly there is an inherent conflict between these two groups. This conflict can be constructive or destructive depending on the management, structure and commitment of individuals. If the central support group is anxious to learn and to provide service and the hospital staff are able to assess their needs and are well

educated in the capabilities of the technology, excellent progress can be made. The Veterans Administration has a particularly complex problem in that the history of shared, decentralized, modular development of production patient care applications is very poor. Both vendor and government-sponsored activities in shared development of complex systems have met with relative failure. Joint venture and shared system development has been most successful where the applications are circumscribed, the project limited, or the tasks sufficiently general that local differences do not negate the general programs written. For example, a small program to maintain data on a few hundred patients may be quick and easy to write, relatively transportable, and easy to modify should someone at another hospital have the skill and desire to do so. Conversely systems to meet complex needs such as medication ordering, reporting, and inventory, or sophisticated clinical laboratory systems are difficult to design, complex to implement, require individuals full time to operate and support them, and have a tendency for a system designed in one hospital to be useless in another unless attention is paid to designing systems with sufficient generality to be useful and cost-effective to maintain. Numerous commercial systems have failed or required expensive and extensive redesign simply because the initial system was programmed based entirely on the characteristics of one clinical laboratory, one hospital pharmacy, or one physician with a certain style of medical practice. There is no simple solution to these types of problems. Our experience with a management team oriented toward problem solving, working with line managers and staff within the hospital to specify needs, to install and locally modify operational systems and to develop staff expertise which may be applied to future problems has been a worthwhile and successful model for us. This approach was used by the Veterans Administration in their early, successful prototype efforts in the Washington VA Hospital. That system, while it had the expected number of problems with any prototype, made a significant historical contribution to advancing the state-of-the-art of the utility of large scale computer systems in a medical environment. Assembling a management team with a limited, circumscribed set of

targets that can feasibly be met that are of significant benefit to the Veterans Administration Hospital System seems the most appropriate approach. Based on our experience we would recommend that the team be based in a selected hospital, report to the administration of the hospital, have access to central resources required for the technical and contract aspects of their assignment, and work primarily with the line hospital departments to solve specific service needs. Education would be a major objective both for the task force to educate itself to the hospital's needs and to in turn educate hospital staff to the characteristics of alternative modern technology support in hospitals. The team should consist of interdisciplinary health care professionals, industrial engineering staff, and computer scientists. The commitment should not be to computer systems but to problem solving taking into account the realities of medical care delivery. Successes in a single hospital environment could then be more readily propagated to other hospitals not only because technical issues had been resolved but because management issues, training guides, and the development of a knowledgeable skilled implementation team would be available as well. This model is consistent with the traditional medical and corporate training of technical and management staff for solving high technology problems and should be applicable to the Veterans Administration system as well.

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4. Evaluation of the Medical Information System of the NIH Clinical Center, Jan. 1982.

RESPONSE OF THE NATIONAL INSTITUTES OF HEALTH TO WRITTEN QUESTIONS SUBMITTED BY HON. ALAN CRANSTON, RANKING MINORITY MEMBER OF THE SENATE COMMITTEE ON VETERANS' AFFAIRS

Question 1. You made several points about the individuality of different hospitals and the need for the ADP systems serving them to reflect these differences, stating, on page 13 that "[i]t is in fact easy to find multiple instances where a particular medical computer application works extremely well in one hospital and poorly in another" and on page 15 that "[i]ndividual hospitals represent the true system users who ultimately must determine the specific system capabilities which the need, the mode of operation, and the utility, disutility, success, or failure of the system." You also note that NIH modified and tailored the system it purchased to meet its needs.

Question 1A. Please provide some examples of the idiosyncrasies of individual hospitals which make modifications necessary.

Answer 1A. In Question A. you have asked for "examples of the idiosyncrasies of individual hospitals which make modifications necessary". In many cases the differences between hospitals are operational and based on how to minimize costs while delivering good care in the face of different disease and patient population mixes. For example, in some hospitals the most efficient way to obtain blood samples from patients may be to have a special phlebotomy team drawing blood on a 24-hour-per-day, 7-day-per-week basis. This decision might be based on a large volume of patients, on emergency and obstetric services requiring blood drawing services around-the-clock, or a very active surgical and trauma service. In another hospital a phlebotomy service might be appropriate only for the 6:00 a.m. to 10:00 a.m. high-volume blood drawing, with physicians or nurses obtaining samples at other times. Some clinical laboratory computer systems support only full phlebotomy coverage, other systems provide no assistance in the forms of labels and pick-up lists to phlebotomy teams, and other systems do not perform well in a laboratory using a mix of phlebotomy team collection at some times of the day and not others.

Another example concerns the operation of X-ray departments. In a large X-ray department certain procedures may be grouped and done concurrently on one visit to the department, while other procedures require separate visits, specialized examination equipment, and the attendance of a radiologist at all times. It is common in the manual requisition process for a single requisition to be used for exams that may be grouped, and individual requisitions for each specialized exam. One medical information system provides the choice of grouping all exams on a single requisition or putting each exam on its own separate requisition. This imposes an extra burden on the Radiology Department in either case, leaving a choice of excess paper generation and confusion or not having the specialized requisitions available as needed. In practice this may lead to some increased clerical work rather than the savings for which one introduced the system.

The provision of hospital pharmacy services provides an additional example of alternative delivery systems and their impact on computer support. A hospital pharmacy may dispense medications from one central point or may dispense medications from multiple decentralized small pharmacy units. In a sophisticated modern medical information system the medication order "written" by a physician or nurse using a computer terminal should automatically print on label stock in the proper pharmacy location. A computer system designed to handle only a central pharmacy would be unacceptable in a decentralized pharmacy implementation. A pharmacy may be decentralized for valid medical and management reasons such as institutional size, the specialized need of certain medical care units such as oncology and intensive care, or to provide more intensive professional pharmacy assistance in certain medical settings. Pharmacy operations may be further complicated by "unit dose" distribution whereby the pharmacist takes over many former nursing responsibilities in the preparation and distribution of medications. To support a unit dose pharmacy, a computer system must have additional programs which organize and collate the doses of medication to be received by all patients on a given nursing unit for a given medication administration time. A further complication is introduced into the pharmacy setting by the method of handling intravenous medications. Again this varies from hospital to hospital and ranges from all intravenous preparation being done in the pharmacy under sterile conditions by a pharmacist, through an intermediate system where certain medications and additives are prepared in the pharmacy, to a completely nursing unit based intravenous additive approach. For a system as large and complex as the Veterans Administration I would expect all these variations plus additional methods of pharmacy management to be in use.

These are just a small sample of the differences which exist in the medical care delivery and management of different hospitals. The presence of this diversity continues to baffle developers and vendors of medical computer applications. As one reviews the experience of the last 15 years, it is quite evident that numerous individuals and companies have grossly underestimated the cost, lead-time, and complexity of introducing computer technology in hospitals. A not infrequent comment after millions of dollars has been spent is "I never thought it would be this complicated", or "why aren't hospitals all alike?"

Question 1B. Did the NIH Clinical Center find it necessary to bring in computer specialists to carry out the modifications to its ADP system?

Question 1B(i). [If so] How many were required and at what cost?

Answers 1B, (i). With specific reference to Question B, as to the need for the Clinical Center to bring in computer specialists to carry out modifications to its ADP system, the specific answer is "yes". The need for computer specialists, industrial engineers, and subject matter specialists is dependent on several factors. Obviously the extent to which an available system meets Clinical Center needs is the first criterion in determining the number of computer specialists necessary to carry out modifications. Our commercially acquired Clinical Pathology Laboratory computer system has never required more than three individuals working approximately one-quarter time to adapt the system to meet continually evolving laboratory needs in the areas of quality control, new instrument interfacing, laboratory statistical analysis, work place and efficiency improvements, out of range and abnormal result detection, and so forth.

The Clinical Center Medical Information System was a more complex installation and on-going management task as the system effected the entire hospital rather than one circumscribed department. In this instance, the system was selected based on a high degree of flexibility in adapting the format and content of the information displayed on computer terminals and printed for medical use and inclusion in the patient record. In particular, this system permits "subject matter specialists" such as nurses, laboratory technologists, and pharmacists to learn the procedures for creating and modifying system displays. None of these individuals falls into the category of computer programmers. Even during the peak contractor staffing required to initially install the system, we did not exceed ten such subject matter specialists with full-time involvement. Over 6,000 changes and additions have been made to the MIS over its seven year history in the Clinical Center. Only 35 have required programming, albeit complex programming in some instances. Obviously the original selection of a system permitting ease of change by non-programmers was important.

Question 1C. Does the Clinical Center currently retain any individuals to maintain its ADP system?

Question 1C(i). [If yes] How many and is this their sole responsibility?

Answers 1C, (i). In the evaluation of alternative medical computer systems, we feel it is important to identify the number of individuals and the skill levels required to adapt and maintain a system. In fact, this may be even more important than the problems associated with initial installation. It is this assessment that in the long run determines both the level of support staff required and the rate at which system enhancements and modifications may be made to reflect changing hospital needs.

At the present time the Clinical Center staff associated with the support of computer systems may be broken into several categories. The first large distinction is between clinical care support work and research computer systems. For the clinical care support systems, there is a further breakdown based on skill level and type of responsibility. All of the patient care computer systems together require approximately eleven computer operators. This staff provides 24-hour-per-day, 7-day-per-week coverage of our two major Clinical Center patient care systems, namely the Clinical Center Medical Information System and the Clinical Pathology Laboratory computer system. In addition to monitoring and managing computer operations, these individuals also perform related tasks in the Clinical Pathology Department and in support of the large COMIS. They perform such essential tasks as nightly back-up copies of data, maintenance of archival files, processing of necessary patient care and hospital administrative management reports, and the normal variety of computer operations tasks. Some reduction in the number of operations staff could be achieved if the computer systems were located in the same physical space within the Clinical Center. The programming staff for clinical care projects has ranged from 3 to 5 individuals for both software maintenance and enhancements over the past 7 years. A given individual at a given time may be devoting anywhere from 25% to 100% of his time to computer software related activities on the clinical support systems. A typical figure might be in the range of 50% with the balance of the time devoted to management studies, to long-range planning, or to support of the various research systems used throughout the Clinical Center. In general, the data processing support group within the Clinical Center is substantially lower than for most other hospitals of a comparable size and complexity.

Chairman SIMPSON. Mr. Shapin, please.

TESTIMONY OF PAUL GARY SHAPIN, DIRECTOR OF INFORMATION SYSTEMS, FAIRFAX HOSPITAL ASSOCIATION

Mr. SHAPIN. In today's technical environment there are a variety of alternatives to choose from when deciding to introduce automation into an area; large mainframe computers, minicomputers, microcomputers, and time sharing services. Although minicomputers and microcomputers have been getting the most press recently, all segments of the computer industry are doing well, because just as there are different kinds of computers to choose from, there are different kinds of problems to be solved.

In an institution such as a hospital, many different classes of problems exist. And therefore it is not unreasonable to expect that a variety of approaches will be chosen when the time comes to automate. The role of the information systems director therefore should include the responsibility of helping potential users choose properly between the various approaches.

Within the Fairfax Hospital Association, we have a large mainframe central computer network and a minicomputer time sharing network, both controlled by the central data processing department. In addition, the data processing department also encourages the use of dedicated minicomputers and microcomputers in certain circumstances.

In deciding between alternatives, the following factors are considered: One, the scope of the application. Is it institution wide, is it department wide, or does it help one individual do his or her work better? Two, the size of the application. Are there hundreds of millions of characters of information, a couple of million, or a couple thousand characters stored? Three, the types of functions to

be performed. Are complex calculations being performed on the information, or are we merely trying to store and retrieve it in an organized fashion? And four, the interface with other systems. Are they stand-alone or integrated systems?

For corporatewide systems, we use the central data processing computers. These systems include general ledger; the medical information system, payroll and inventory, et cetera. For information storage and retrieval problems that do not interface with corporate systems such as clinical research projects, we encourage users to design their own systems using our time sharing minicomputer network.

This time sharing network incidentally utilizes File Manager which was written by the VA. And it is one of the best bargains that we have gotten out of the government recently considering the price.

For departmentwide applications that are transaction oriented, we permit the use of turnkey minicomputer systems. However, we discourage the departments from writing their own software, because there was a corporatewide decision not to allow proliferation of programmers throughout the organization.

For personal applications, microcomputers are appropriate, again when the software is already available and does not have to be written inhouse.

By offering a variety of technical alternatives, everyone benefits. Those who have applications for small systems can address their own needs. And those who must rely on large machines will find the central data processing department more responsive since it will be freed up from responding to small requests.

Different institutions may of course draw the line differently as to what they do or do not permit departments to do and use. The significant point is that institutions should offer in a controlled fashion a variety of solutions to users when it comes to meeting computer automation demands. Thank you.

Chairman SIMPSON. Thank you, very much.

Colonel McGinnis, what types of data do each of the military departments require for management decisions?

Colonel MCGINNIS. We need workload data for inpatient and outpatient, and peripheral data from the ancillary units of any medical treatment facility. In addition, there is a requirement for resource data, and uniform staffing data that flows up through the various chains of command to the departmental level, and then on to the Defense level for a comparison of the various types of facilities.

Chairman SIMPSON. What types of data do the hospitals using TRIMIS share with the nucleus that you referred to?

Colonel MCGINNIS. At a hospital, you have of course the users themselves; the work stations and the high volume work centers, the laboratory, pharmacy, patient appointing, radiology, dietary, and logistics. They do not share a lot of patient data among themselves. We did a study at one point in time early in the planning, because it was felt that we should set up a very elaborate communication system to make sure that the information moved between all of these systems.

But when we went to all of the users and asked how often do you pharmacists communicate with your laboratory science officers, we found out that if there was, on any particular patient, any kind of communication, more often than once a week, and at the most three requirements a month, it was rare. So, it was not worth our time to build in a very, very elaborate communication system to address one, or two, or three requirements a month. When you are going to have that hit, it would be better to handle it outside of the automated system.

So, that is one community of users. Then the hospital commander wants to know everything that is going on in his facility. He wants to know everything that is going on in each of the user's communities within his facility. So, he is more interested in the aggregate data of how many patients did you see in that particular clinic or service.

Chairman SIMPSON. You say that TRIMIS is particularly charged with "strengthening early decisions which shape cost and utility." It would be helpful if you could give the committee a specific example of how TRIMIS has been able to do that.

Colonel MCGINNIS. There are, as I said, 165 hospitals that want some form of automation immediately. We would love to please them. But better wisdom has dictated that we go at it rather slowly so that we know for sure that what we are obtaining meets the user's requirements, and then we get it at a very cost beneficial price, and are installing something in that will pay for itself.

So, we are going at it in phases. Phase 1 is buy a few systems, install them, test them, evaluate them, and be sure we know what we are really asking for before we go to the next phase. Then with what we learn from phase 1 we move to the second phase, installing standardized systems. And still we have not rushed ahead into integration at this phase. We are still just standardizing our capabilities being sure we know what it is our users want and staying flexible.

And finally then, we would bring all of the users in any one single hospital together in any variation of functional components that they desire into something that we call the composite health care system. That is when integration would take place. It is a little slower, but it allows us to take advantage of the marketplace as it changes, and to make sure that we know what our user requirements are.

Our approach goes back to the user's needs. And we did find early on that the community of users said one thing when they put it down on paper; then when we went out and procured a system, it usually was not what they really said they wanted. So, we are making sure that they know exactly what it is that they want before we jump into it.

Chairman SIMPSON. I understood that you experienced many setbacks in the process of setting up the TRIMIS system. What basic lesson or lessons might you share with us that you learned from that experience?

Colonel MCGINNIS. I think that a program as large as TRIMIS and the community that it represents being so large, and since we were centrally managed we received a significant amount of oversight and reviews, which caused procurement delays, and caused a

significant amount of reorienting of the program in its early phases.

And I suggest that this is the phase that I see the VA now going through, quite frankly. We were sent through the same planning, and replanning, again and again. Then finally one agency came out and said stop all of this planning, just make the plans short, sweet, and simple. This was after we had been directed to develop more plans, four or five times.

So, there was a lot of inconsistency in the guidance that we were given about planning. And I see much of that occurring in what I read about the VA.

Chairman SIMPSON. You have made yourself available to share that background with the VA personnel, have you not?

Colonel MCGINNIS. Yes, sir.

Chairman SIMPSON. And did they take advantage of that?

Colonel MCGINNIS. There is a Federal Health Resources Sharing Committee, and a subcommittee on medical data automation which TRIMIS happens to be chairing at this particular time, and the VA has membership. Anything at all that we are doing, we share along with the Public Health Service and the Veterans' Affairs members of that committee.

Chairman SIMPSON. I think that that is very important.

Dr. Lewis, please if you would, describe how you decide that a software system exists among those available commercially that would suit the needs of a multisite hospital system, and your thoughts about cost considerations there, please.

Dr. LEWIS. I think in terms of multisite systems, there are a number of ways to look at it. Most of the commercial systems in fact are multisite systems. For profit companies certainly would not go into the marketplace unless they felt that they had a system which could be effectively sold to a multiplicity of hospitals, that could be cost effective in those hospitals, and could be reasonably and easily adaptable to varying hospital needs.

I think that one of the things that has evolved over the last 6 or 7 years is an industry understanding that not all hospitals are identical, and that the commercial packages have to reflect and permit ease of hospital adaptation. Certainly that was one of the selection criteria in our own use of commercially acquired systems.

We acquire and evaluate systems for our needs in part based on the ability to adapt them. This has been a very positive part of our experience.

Chairman SIMPSON. If you could, comment on the task force inclination to develop its own homegrown systems rather than to purchase existing or commercial systems. And if you could share with us what you think the consequences are in erring in the choice of software, that would be helpful.

Dr. LEWIS. In running the experiences, some documented and some simply rumors in the industry over the last several years, one of the comments about the Veterans' Administration approach was that they have always thought that they had to multiply by 172 the software costs of any particular application software that they wanted to acquire. Such applications have included clinical laboratory, pharmacy, admitting, and other systems. Obviously a company that develops such systems, given an opportunity to sell 172 of

them, will negotiate a substantial discount in favor of the quantity buyer.

I think that Colonel McGinnis' experiences have proven that hypothesis. We were able to acquire a single system at the NIH, where final negotiated prices were in the range of 50 percent of initial bids. Given the VA situation, I think quantity discounts are quite possible. The conclusion that free software or home developed software is the least expensive way to go, I think, is a dangerous conclusion. In addition, central support for what one might call "production patient care applications" is very important. All of you have had, I am sure, phone bills, or gas bills, or utility bills where the computer has made a mistake. Computers in hospitals have a tendency to make mistakes at even more awkward hours in the middle of the night, weekends, and holidays. I would be concerned that there be an adequate support structure of professionals to correct those kind of difficulties. It is not a part-time "catch as catch can activity."

Chairman SIMPSON. Let me ask you a final question.

If you were placed in charge of developing VA's automation and had responsibility for the cost of the data, where might you begin, given the experience that you have had?

Dr. LEWIS. This is tough in 30 seconds. I would recommend that the VA come to the clinical center to see how our experiences are applicable to them. They should involve and educate as many users in their premier hospitals as they could, expose them to many hospitals, the failures as well as the successes in other parts of the hospital industry.

Chairman SIMPSON. I think that is an excellent answer. And you know the word perfection has been used several times in the morning's hearings. And when we give up on seeking perfection in all systems, we may get something done around this place. I know very little about my perfectness, but I surely know a great deal about my imperfections.

And I think that it must be the same with institutions, since they consist of human beings. So that is helpful really. The sooner that we give up this business of looking for the perfect system, then maybe we can get on with doing one that at least will meet the needs of the most human beings instead of the great totality. So that was a very precise answer, and I appreciate it. It was helpful.

Now, Mr. Shapin, just a few questions. If you could, discuss the advantages and disadvantages of a distributed system using microcomputers at each hospital site versus a system connected to a more central computer, please.

Mr. SHAPIN. First of all, we are a multisite operation. We really have one large hospital and two smaller hospitals. And we use the central approach for our MIS. The advantages, I would say, of using micro computers in the three institutions—the advantage of decentralizing, I do not know what size—if you had a different machine in each institution, at least each institution could enhance and modify the system to fit its individual needs.

With a completely centralized system emanating from one institution, I believe it would probably get bogged down in trying to make all of the adjustments necessary for each smaller institution.

As far as microcomputers versus mini's, I could not comment on that between institutions.

Chairman SIMPSON. Do physicians and other health care professionals, in your mind, play an active role in writing programs and in determining exactly what is needed to be included in software packages?

Mr. SHAPIN. In our institution, the design was done mostly by department managers who are not physicians. They are professional hospital administrators, and that kind. And so far we have been successful.

Chairman SIMPSON. How is it possible, given rapidly changing technology, to plan adequately and cost effectively 5 years ahead as GSA has proposed that the VA do?

Mr. SHAPIN. In the past, I did not even think that it was possible. Because the length of time to design a system begins to exceed the time before it would have to be changed. But with new software that is coming out, it is a whole new generation of software called application generators. Systems can be designed with modification in mind.

The whole concept of prototyping is a new concept that is coming out in the software industry, where a system is designed, and can be changed, and can be rechanged, a lot faster. And therefore to do a 5-year plan is not necessary when the software is more flexible. The file manager, which I have mentioned in the paper, is that kind of software.

Chairman SIMPSON. One final question. Going on your own experience, and after hearing the VA testimony today, could you just briefly outline the pitfalls that you see that will be faced, and some advice that you might share on how best to avoid them with your experience?

Mr. SHAPIN. One thing that we found that was very successful and very useful when the project would be behind schedule and people would be frustrated, we had everybody and the users involved right from the very beginning. And we kept them totally informed as to what was going on. So when the system finally arrived and the software was delivered, it was well accepted. And it was really related to the fact that people were involved from the start right to the grassroots level.

Second, I would start off with a centralized data base design that centers on medical records, and it centers on the nursing station. And going from that central data base, then branch out to the ancillary departments.

Chairman SIMPSON. Well, I very much appreciate all of you being here and testifying. I think that there will be other questions perhaps submitted by other Members of the Committee in writing. And we would appreciate your prompt response to that. I hope that this has opened some additional avenues for thinking and communication on this issue. Because we do not want to let it just slip away, or go back to its usual business. Hopefully, we have matured past that point, where we are not going to swallow that one anymore. So I very much appreciate what all of you have shared with us.

I thank you, very much. And I hope that you will continue communication with the Veterans' Administration. They really, I

think, try to make an effort to break a logjam. It is not only very unfortunate, but I think that it is going to be embarrassing if they don't. And worse than all of that, it will do a disservice to the veteran population and to the taxpayer. And those days of tolerating such a disservice are gone forever around this joint. So thank you, very much, I appreciate it.

[Whereupon, at 11:52 a.m., the hearing was adjourned.]

APPENDIX A

VA INVENTORY OF COMPUTERS

Prepared by:

THE OFFICE OF DATA MANAGEMENT AND TELECOMMUNICATIONS
VETERANS ADMINISTRATION

June 7, 1982

Enclosure 1

VA INVENTORY OF COMPUTERS

June 7, 1982

PART I - Data Processing Centers

STATION (S)	SYSTEM (IDS)	REMARKS/LOCATION**	PRIMARY USE
AUSTIN, TX (200)	IBM 370168 (02)		Multiple
	PKE 7/32 (04)		CALM
	IBM 36065 (08)		Multiple
	IBM 36065 (10)		Multiple
	HCN H716 (03)	Ruston MC	Clinical Lab
	HCN H716 (04)	Miami MC	Clinical Lab
	HCN H716 (05)	Birmingham MC	Clinical Lab
BIRMINGHAM, AL (201)	HCN H716 (07)	Durham MC	Clinical Lab
	IBM 36085 (07)		Multiple
	HCN 6660 (AC)		Development System
	HCN H6680* (AD)	Target RISC System	CP&E
	HCN 6660* (08)	Target Central RISC	CP&E
	HCN H715 (02)	Winn MC	Clinical Lab
Medical Computer Support Center (Wines Building 37)	DEC ECL4600 (20)		Pharmacy
	DEC ECL4600 (21)		Pharmacy
	DEC ECL4600 (22)		Pharmacy
	DEC ECL4600 (23)		Pharmacy
	DEC ECL4600 (24)		Pharmacy
	DEC ECL4600 (25)		Pharmacy
	DEC ECL4600 (26)		Pharmacy
	DEC PDP1170 (27)		Pharmacy
	DEC VAX11780 (28)		Multiple
	DEC VAX11780 (29)		Pharmacy
	DEC VAX11780 (30)		Pharmacy
	DEC VAX11780 (31)		Pharmacy
	DEC PDP1170 (33)		Pharmacy
	DEC PDP1134 (34)		Development Testing
	DEC 8000 (35)		Pharmacy
	DEC PDP1170 (36)		Pharmacy
LOS ANGELES, CA (202)	DEC PDP1170 *		Pharmacy
	HCN H6680* (AD)	Target RISC System	CP&E
	HCN 2030 (07)		Pharmacy
	HCN H716 (01)	Wadsworth MC	Clinical Lab
	HCN H716 (04)	Long Beach MC	Clinical Lab
PHILADELPHIA, PA (203)	HCN H6680* (AD)	Target RISC System	CP&E
	IBM 36040 (07)		Insurance
	IBM 36065 (08)		Insurance
	IBM 1800 (02)	Boston MC	Clinical Lab
WT. PAUL, PA (204)	IBM 36020 (03)		Multiple
	IBM 4341 (04)		CARE
	IBM 36040 (06)		CP&E
	IBM 36020 (08)		Multiple
	HCN H716 (01)	Minneapolis MC	Clinical Lab
	DEC 3300 (05)	Minneapolis MC	Patient Monitoring
CENTRAL OFFICE (101)	IBM 36040 (11)	Washington MC	AICS
INSTALLED SYSTEMS 45 PURCHASED 45 LEASED 0			

*Dual CPU's

**All systems are purchased unless otherwise indicated

Prepared by (30A3)
June 7, 1982

VA INVENTORY OF COMPUTERS

PART II - Central Office/Other

<u>USER</u>	<u>SYSTEM (ID#)</u>	<u>REMARKS*</u>	<u>PRIMARY USE</u>
<u>SBA</u>	<u>PCU IV/90 (01)</u>	<u>Leased</u>	<u>Case Tracking</u>
<u>Construction</u>	<u>DEQ POP15 (03)</u>	<u>Leased</u>	<u>Architectural Graphics</u> <u>Architectural Graphics</u> <u>Data Entry/On-Line Updating</u> <u>Data Entry/On-Line Updating</u>
	<u>DEQ POP134 (04)</u>		
	<u>PCU IV/90 (05)</u> <u>DEQ VXL1780 (06)</u>		
<u>Controller</u>	<u>DEC RCL/PCE (07)</u>	<u>(Hines Bldg. 215)</u>	<u>Travel Advances/Budget</u> <u>Chapter 32 Processing</u>
	<u>PCU IV90 (09)</u>		
<u>DHS</u>	<u>TRK 8002 (07)</u>		<u>Pharmacy</u>
<u>Administrative Service</u>	<u>S/L 380 (09)</u>	<u>Located at Forms Depot</u> <u>(to be replaced with</u> <u>Hewlett Packard System)</u>	<u>Inventory Control</u>
<u>COMT/Information and Regulations Staff</u>	<u>IBM 4331 (10)</u>	<u>Leased (at SSC)</u>	<u>AWPLS</u>
<u>Administrator</u>	<u>IBM V880 (11)</u>	<u>Leased (at SSC)</u>	<u>Correspondence Tracking System</u>

Installed System 11
Purchased 7
Leased 4

*All systems are purchased unless otherwise indicated.

STATION (Station #)	SYSTEM/MODEL (ID#)	REMARKS	ACQUISITION/ADDITION	PRIMARY USE
Albany, NY (506)	DEQ POP1140 (01)	_____	To be transferred to Providence	Nuclear Medicine
	DEQ POP1134 (02)	_____		Nuclear Medicine
	DEQ POP1134 (03)	_____		Cardiology
	DEQ POP1103 *	_____		Pathology
	DEQ POP1103 *	_____		Nuclear Medicine
Albuquerque, NM (501)	DEQ POP8E *	_____		Pathology
	DEQ POP1103 *	_____		Pathology
Allen Park, MI (553)	MOO A2 (02)	_____		Nuclear Medicine
	TEX 4054 (03)	_____		Medical Research
	RPC RP2100 *	_____		Nuclear Medicine
	DEQ POP1105 *	_____		Medical Service
	RPC RP1000E *	_____		Dietetic Service
American Lake, WA (505)	DEQ POP8E (01)	_____		Medical Research
	DEQ POP8 (02)	_____		Laboratory
	DEQ POP8E (03)	_____		Health Service R&D
Ann Arbor, MI (506)	DEQ POP8E (01)	_____		Medical Research
	DEQ POP8 (02)	_____		Medical Research
	DOC 840 (03)	_____		Nuclear Medicine
	MOO MOOLMED *	_____		Nuclear Medicine
	DEQ POP1134 *	_____		Medical Research
Atlanta (Decatur), GA (506)	DEQ POP1103 *	_____		Pathology
	DEQ POP1103 *	_____		Pathology
	DEQ POP1103 *	_____		Pathology
Atlanta (Decatur), GA (506)	PAC P101 (01)	_____		Nuclear Medicine
	DEQ L-94E (02)	_____		Autiology
	TEX 4051 *	_____		Medical Service
	TEX 4051 *	_____		Medical Service
	RPC RP9830 *	_____		Medical Research
	APH 2 *	_____		Radiology
	APH 2 *	_____		Medical Research
Augusta, GA (509)	RPC RP9825 (01)	_____		Medical Research
	DEQ POP8A (02)	_____		Medical Research
	DEQ POP1160 *	_____		Medical Service
	DOC H0A03 *	_____		Medical Service
	DOC H0A03 *	_____		Nuclear Medicine
	DEQ POP1123 *	_____		Nuclear Medicine
	DEQ POP1134 *	_____		Nuclear Medicine
	DOC H2L6130 *	_____		Neurology
	IBM 5756 *	_____		Nuclear Medicine
	RPC RP1000P *	_____		Medical Administration
	JAC 500 *	_____		Neurology
	RPC 78706 *	_____		Supply Service
	RPC 78706 *	_____		Medical Service
	RPC 78220 *	_____		Medical Service
	RPC 78225 *	_____		Medical Service
	RPC 1000E *	_____		Medical Service
	RPC 1000E *	_____		Surgical Service
	RPC 1000E *	_____		Surgical Service

STATION (Station #)	SYSTEM/MODEL/ID#	REMARKS	ACQUISITION/NOTES	PROGRAM USE
Baltimore, MD (512)	RPC HP9815 (01)	=====		Clinical Lab
	RPC HP9810A (02)	=====		Clinical Lab
	RPC HP9810 (03)	=====		Cardiac Research
	RPC HP9815 (04)	=====		Medical Research
	DEQ POP1103 *	=====		Supply Service
	DEQ POP1104 *	=====		Pathology
Key Bases, FL (516) (St. Petersburg)	DEQ POP1134 (01)	=====		Health Services R&D
	CAI A16 (02)	=====		Medical Research
	AEL D4692 *	=====		Building Management
	MES 8184 *	=====		Nuclear Medicine
Bulford, WA (518)	DEQ POP12A (01)	=====		Medical Research
	RCS TR680 (03)	=====		Alcoholism Research
	DEQ MDK11 (04)	=====		Epilepsy Research
	DEQ POP1123 *	=====		Medical Research
	DEQ POP1103 *	=====		Pathology
Big Springs, TX (519)	CDN 8500 (01)	=====		Laboratory
Birmingham, AL (521)	DEQ POP12 (02)	Funded		Cardiology
	DEQ POP8A (03)	=====		Medical Research
	DEQ POP1120 (04)	=====		Medical Research
	DEQ POP1134 (07)	=====		Audiology
	DEQ PLP1170 *	=====		Medical Administration
	TRC 4051 *	=====		R&D
	DEQ POP1144 *	=====		Audiology
	DEQ POP1123 *	=====		Audiology
	DEQ POP1123 *	=====		Audiology
Boston, MA (523)	DEQ POP11A (01)	=====		Medical Research
	RPC 9830 (03)	=====		Medical Research
	RPC HP9445 (04)	=====		Medical Research
	RCS TR680 (05)	=====		Psychology
	DEQ MDK11 (06)	=====		Laboratory
	DEQ MS100 (07)	=====		Health Services R&D
	RCS TR680 (09)	=====		Medical Research
	DIC NOVA2 (10)	=====		Neurology
	APM 2 (11)	=====		Health Services R&D
	DEQ POP1105 (12)	=====		Pathology
	RCS TR680 *	=====		Medical Research
	DIC NOVA3 *	=====		Medical Service
	DEQ POP1134 *	=====		Pathology
Boston CRC (750)	DEQ POPRE (0A)	Funded		Medical Research
	CDC 3300 (02)	=====		Medical Research
	APM 2 (03)	=====		Medical Research
	APM 2 *	=====		Medical Research
	APM 2 *	=====		Medical Research

DMS VA Inventory of Computers
Veterans Administration Medical Centers

June 7, 1982

STATION (Station #)	STATION/Model (ID)	REMARKS	ACQUISITION/NOTES	PURPOSE/USE
Cruz, NY (526)	DEQ POPBE (01)	_____	_____	Nuclear Medicine Research
	DEL Report (02)	Leased	_____	Radiology
	DEQ POPBA (04)	_____	_____	Adrenal Research
	DEQ POP1134 (05)	_____	_____	Pathology
	DEQ POP1103 (06)	_____	_____	Radiology
	DEQ POP1144 (07)	_____	_____	Nephrology
	DEQ POP1103 (08)	_____	_____	Pathology
	MAN 2200 (09)	_____	_____	Pathology
	DCX NOVA2 (10)	_____	_____	Building Management
Brooklyn, NY (527)	DCX ECL5130 (01)	_____	_____	Nephrology
	MDS MCDUMED (02)	_____	_____	Nuclear Medicine
	TBM 5100 (03)	_____	_____	Laboratory
	RPC 5600A (04)	_____	_____	Cardiology
	DCX ECL5130 (05)	_____	_____	Renal
	ROS TMS80 *	_____	_____	Medical Research
Buffalo, NY (528)	DCX 820 (01)	_____	_____	Medical Research
	NIC NIC80 (02)	_____	_____	Neurology
	MD AJ (03)	_____	_____	Nuclear Medicine
	DCX 800 *	_____	_____	Nuclear Medicine
Castle Point, NY (533)	DEQ POPBM (03)	_____	_____	Cardiology
Charleston, SC (534)	RPC RP9810A (01)	_____	_____	Nuclear Medicine
	RPC 9810A (02)	Parked	_____	Respiratory Care
	RCS TMS80 (03)	_____	_____	Medical Research
	TWA VID540 (04)	_____	_____	Nuclear Medicine
Cheyenne, WY (442)	ROS TMS80 (01)	_____	_____	Pharmacy
	DCX NOVA312 (02)	_____	_____	Nuclear Medicine
Chicago, IL (Lakeside) (535)	ROS TMS80 (01)	_____	_____	Medical Research
Chicago (Westside), IL (537)	TBM SCULDS1 (01)	_____	_____	Nuclear Medicine
	MAN 720C (02)	_____	_____	Medical Research
	RPC RP5400 (03)	_____	_____	Intensive Care
	ADA CDS *	_____	_____	Nuclear Medicine
	RPC RP1000 *	_____	_____	PAT Data
	RPC 78706A *	_____	_____	PAT Data
Cincinnati, OH (539)	DEQ POP12 (01)	_____	_____	Pharmacy
	MAN 2200 *	Leased	_____	Medical Research
Clarksburg, WV (540)	DEQ POPBA (01)	_____	_____	Laboratory

STATION (Station #)	SYSTEM/MODEL (ID#)	REPAIRS	REQUISITION/NOTES	PRI-MARY USE
Cleveland, OH (541)	DEC ROMA210 (01)			Medical Research
	DEC POP1145 (02)	Parted		Medical Research
	MDI 5050 (03)			Medical Research
	RPC RP1354B (04)			Medical Research
	DEC POP1134 (05)			Medical Research
	DEC MDCL1 (06)			Medical Research
	DEC MDCL1 (07)			Medical Research
	DEC LS111 (08)			Medical Research
	DEC POP1134 *			Pulmonary Medicine
Columbille, PA (542)	BUR L5000 (01)			Medical Administration
	APM 2 (02)			Medical Research
Columbia, MD (543)	DEC POP12A (01)			Laboratory
	DEC POP1140 (02)			Nuclear Medicine
	NAV 2200 (04)			Laboratory
	APM 2 (05)			Supply
	DEC POP1134 (06)			Laboratory
	JNC 3500 (07)			Supply
Columbia, SC (544)	DEC POP1110 (01)			Medical Research
	DEC ROMA210 (02)			Physiological Research
	TRK SDG54 (03)			Nuclear Medicine
	RPC 78706A (05)			Intensive Care
	TRK 4052 *			Pulmonary Medicine
	RPC 78706A *			Intensive Care
Dallas, TX (549)	ZIM SYS3 (03)			Pharmacy
	DEC POP88 (04)			Medical Research
	DEC POP1144 *			Pediatric
	MD A2 *			Nuclear Medicine
	VEC 5005 *			Pharmaco Kinetics
Lawrenceville, IL (550)	ROC 78080 *			Laboratory
Lyton, OH (552)	MCR 0130 (01)			Fiscal
Mower, CO (554)	DEC POP12 (01)			Medical Research
	ZIM SYS3 (03)			Pharmacy
	DEC POP1134 (06)			Nuclear Medicine
	DEC POP1134 (07)			Surgery
	DEC POP1134 (08)			Nuclear Medicine
	NAV 2200 (09)			Medical Research
	ADA CDS (10)			Nuclear Medicine
	DEC POP1123 (11)			Intensive Care
	DEC ROMA *			Pulmonary Medicine
San Antonio, TX (555)	RPC RP9815 (02)			Medical Service

Veterans Administration Medical Centers

STATION (Station #)	SYSTEM/MODEL (HW)	RD-400S	ACQUISITION/NOTES	PRIMARY USE
Durham, NC (558)	IBM 1130 (01)	_____		Medical Research
	DEC PDP1120 (02)	_____		Mental Health
	IBM S257 (04)	_____		Medical Research
	HEI 812 (05)	_____		Nuclear Medicine
	HEI 812 (06)	_____		Nuclear Medicine
	HEI A3 (09)	_____		Nuclear Medicine
East Orange, NJ (561)	DEC PDP1110 (01)	_____		Neurology Research
	DEC PDP8A (02)	_____		Medical Research
	IBM 5110 (03)	_____		Medical Service
	RPC HP9825A (04)	_____		Neurosurgical Research
	IBM 2001 (05)	_____		Audiology Research
	RPC HP5400 *	_____		Intensive Care
	DEC PDP8A *	_____		Clinical Research
	DEC PDP1134 *	_____		Medical Research
Kila, WA (562)	DEC J100 (01)	_____		Medical Administration
Fargo, ND (437)	RPC HP9830A (01)	_____		Pharmacy
Fayetteville, NC (565)	DEC TRS80 (01)	_____		Medical Research
Fort Howard, MD (566)	DEC PDP1124 (01)	_____		Psychology
Fort Wayne, IN (569)	ADA CAM2 (01)	_____		Nuclear Medicine
Fresno, CA (570)	DEC PDP1134 (01) (NP)	_____		Medical Administration
	ADA CDE (02)	_____		Medical Administration
	ADA CAM2 (03)	_____		Nuclear Medicine
Greenville, PL (573)	DEC PDP8 (01)	_____		Nuclear Medicine
	DEC NOV4620 (02)	_____		Medical Research
	DEC SUPER8 (03)	_____		Medical Research
	DEC MINC11 (04)	_____		Medical Research
	TRK 8510A (05)	_____		Health Services R&D
	APM 2 (08)	_____		Mental Health
	APM 2 (09)	_____		Medical Service
	RPC 9815 (12)	Funded		Gastroenterology Research
	RPC HP9810A (13)	_____		Medical Research
	RPC HP9821 (14)	_____		Medical Research
	APM 2 (10)	_____		Medical Research
Grand Island, NE (574)	APM III (01)	_____		Education
Grand Junction, CO (575)	DEC D200PAD (01)	_____		Nuclear Medicine
	RPC 9815A (02)	_____		Medical Research
	APM 2 (03)	_____		Psychology

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STATION (Station #)	SYNOPSIS/MODEL (ID#)	REMARKS	ACQUISITION/NOTES	PRIORITY USE
Hampton, VA (590)	DSM SERIES1 (01)			Engineering
Hines, IL (578)	DEQ POP8E (03)			Orthotic Research
	DEQ POP11 (04)			Medical Research
	NAV 2200 (06)			Medical Research
	DEQ LS111 (07)			Medical Research
	DCE MCVA30 (08)			Nuclear Medicine
	NAV 7208 (09)			Medical Service
	NAV 720C (10)			Medical Service
	NAV 2200B (13)			Medical Research
	DCE MCVA210 (14)			Nuclear Medicine
	DEQ POP8 (15)			Medical Research
	DEQ POP1170 (16)			Rehab. Engineering R&D
	ZEL MCS48 *			Medical Research
	DCE ECL8350 *			Nuclear Medicine
	MOX2102 *			Medical Research
Houston, TX (580)	DEQ POP81 (02)			Medical Research
	DEQ POP8 (05)			Medical Research
	TEX 980A (07)			Medical Research
	JAC J500 (08)			Supply
	DEQ LS111 (09)			Medical Research
	DEQ POP8E (10)			Nuclear Medicine
	MOT M6800 (11)			Medical Research
	MOT M6800 (12)			Medical Research
	APH 2 *			Medical Service
	APH 2 *			Medical Research
	SCD *			Medical Research
Indianapolis, IN (583)	HPC 9810 (02)			Laboratory
	MDI 812 (04)			Nuclear Medicine
	DEQ POP1103 (07)			Medical Service
	NAV 2200 (08)			Nuclear Medicine
Iowa City, IA (584)	EPK SDMS4 (01)			Nuclear Medicine
	DEQ MDMS11 (02)			Gastroenterology Research
	APH 3 (03)			Medical Research
	APH 2 (04)			Pathology
	APH 2 *			Pathology
	APH 2 *			Pathology
Kansas City, MO (589)	VAR 620 (01)			Molecular Biochemistry
	PAD P101 (02)			Nuclear Medicine
	NAV 2200 (03)			Medical Service
	RFC RF9445 (04)			Audiology
	DEQ MCNC (05)			Neurology
	DEQ POP1104 *			Pathology
	RFC RF85 *			Neurology
	DEQ POP1134 *			Medical Research
	DEC POP8 *			Audiology
	RFC MC38 *			Audiology
Kerrville, TX (591)	ADA CAM2 (01)			Nuclear Medicine

Veterans Administration Medical Centers

STATION (Station #)	SYSTEM/MODEL/ITEM	REMARKS	ACQUISITION/NOTES	PROPERTY USE
Leavenworth, KS (646)	MEC MEXLPSD (01)	_____	_____	Nuclear Medicine
	AMB MMBIT (02)	_____	_____	Laboratory
	JNC J350 (03)	_____	_____	Supply
Lexington, KY (596)	DEQ POP1130 (01)	_____	_____	Dietetics
	DEC 1770 (02)	_____	_____	Medical Research
	DEQ POP1115 (03)	_____	_____	Medical Service
	DEQ POP1140 (04)	_____	_____	Nuclear Medicine
	DEQ POPSE (05)	_____	_____	Medical Research
	MIS ALTAIR (07)	_____	_____	Surgery
	MIS ALTAIR (08)	_____	_____	Surgery
	JNC J350 (09)	_____	_____	Supply
	ACA CAMC (10)	_____	_____	Nuclear Medicine
	ACA CES (11)	_____	_____	Nuclear Medicine
Little Rock, AR (598)	NOI 812 (02)	_____	_____	Nuclear Medicine
	DM 11/34 (03)	_____	_____	Personnel
	DFK SDCS3 (04)	_____	_____	Nuclear Medicine
	NEA R89 (05)	_____	_____	Education
	RPC RP9831A (06)	_____	_____	Education
	RPC RP9100A (07)	_____	_____	Education
	RPC RP9820A (08)	_____	_____	Education
Livermore, CA (599)	DEQ POP1134 (01)	_____	_____	Personnel
Lone Linda, CA (605)	DEC C330 (01)	_____	_____	Medical Research
	DEQ POP1170 (02)	_____	_____	Psychiatry
	DEQ POP1103 (03)	_____	_____	Nuclear Medicine
	DEQ POP1134 (04)	_____	_____	Psychiatry
	DEQ POP1135 (05)	_____	_____	Medical Service
	DEQ POP1135 (06)	_____	_____	Surgery
	DEC HCV33 (07)	_____	_____	Radiology
	MEC MEXL30 (08)	_____	_____	Cardiology
	WIC KIC80 (09)	_____	_____	Audiology
	DEC HCV33D (10)	_____	_____	Pulmonary Medicine
	MEC P101 (11)	_____	_____	Nuclear Medicine
	DEC HCV33 (12)	_____	_____	Laboratory
	APH 2 (13)	_____	_____	Medical Service
	MEC Orion *	_____	_____	Audiology
Long Beach, CA (600)	DEQ POP11A (01)	_____	_____	Medical Research
	DTM 70 (02)	Funded	_____	Medical Research
	WIC KIC80 (03)	_____	_____	Audiology
	RPC RP85A (02)	_____	_____	Mental Health
	DEC HCV33 *	_____	_____	Nuclear Medicine
	TRAXI 700 *	_____	_____	Nuclear Medicine
	DEQ POP11/60 *	_____	_____	Supply
	WIC 812 *	_____	_____	Audiology/Speech
	WIC 813 *	_____	_____	Audiology/Speech
Los Angeles, CA (530) (Brentwood)	RPC RP85 *	_____	_____	Audiology/Speech
	RPC RP85 *	_____	_____	Mental Health
	DEQ POP11/04 *	_____	_____	Medical Service
Los Angeles, CA (530) (Brentwood)	WIC KIC80 (03)	_____	_____	Medical Research

STATION (Station #)	SYS. ID, Model (ID#)	REMARKS	REQUISITION/Notes	PRIMARY USE
Los Angeles, CMC (753)	WAV 2200 (01)	=====		Laboratory Audiology
	APW 2 (02)	=====		
Los Angeles, CA (891) (Madeworth)	RPC RP9830A (04)	=====		Medical Research Medical Research Neurology Medical Research
	ART PC127 (05)	=====		
	DEO POP1134 (06)	=====		
	RCE 79080 *	=====		
Louisville, KY (603)	DEO POP1134 (01)	=====		Medical Research Medical Research Nuclear Medicine Nuclear Medicine Medical Research
	IME P083 (03)	=====		
	DGC MCNA3 (04)	=====		
	RPC 9830A (05)	=====		
	RPC 9830A (06)	=====		
Lubbock, TX (753)	DEO POP1104 (01)	=====		Ophthalmology
Lynch, NC (604)	RPC MC80 (01)	=====		Neurology
Madison, WI (607)	IME P083 (01)	=====		Medical Research Nuclear Medicine
	RPC MC80 (02)	=====		
Marion, IN (610)	WAV 2200 (01)	=====		Psychology
Martinez, CA (612)	DEO POP8E (01)	=====		Medical Research Surgery Intensive Care Pulmonary Medicine Medical Research Radiology Surgical Research Neurology Intensive Care Pathology Surgery Engineering Nuclear Medicine Medical Research Cardiology Laboratory Medical Research Nuclear Medicine Rehabilitative Medicine
	IME 8080 (02)	=====		
	RPC RP210E (03)	=====		
	WAV 2200 (04)	=====		
	DEO POP8E (05)	=====		
	DEO POP1104 (06)	=====		
	IME 8080 (07)	=====		
	DEO POP1134 (08)	=====		
	RPC RP210E (09)	=====		
	DEO POP1170 (10)	=====		
	IME 8080 (11)	=====		
	IME 8080 (12)	=====		
	MDX A2 (13)	=====		
	DEO POP1134 (14)	=====		
	DEO POP1104 (15)	=====		
	DEO POP1103 (17)	=====		
	TEX 4051 (18)	=====		
	RECOP101 (19)	=====		
	APW 2 (20)	=====		
Martinsburg, WV (613)	REC P101 (01)	=====		Nuclear Medicine
Memphis, TN (614)	WAV 2200 (01)	=====		Medical Research Nuclear Medicine Administrative Service
	DEO POP1134 (02)	=====		
	DEO POP1123 *	=====		

STATION (Station #)	SYSTEM/MODEL/ID#	REMARKS	ACQUISITION/ACQUIS	PRIMARY USE
Miami, FL (546)	DEM 1130 (01)	Funded		Education
	REC REC80 (02)			Artiology
	DEQ POP12 (03)			Medical Research
	ZRM SYS7 (03)			Engineering
	VAR 620 (08)			Nuclear Medicine
	DEQ POP1144 (07)			Medical Research
	MMH 22008 (08)			Medical Research
	MMH 22005 (09)			Medical Research
	SOL420 *			Medical Research
	BYTE 8 *			Medical Research
	A/REC1051-10 *			Medical Research
	RPC 85P *			Medical Research
	RPC 85P *			Cardiology
Minneapolis, MN (618)	DEQ POP1134 (02)			Engineering
	DEQ POP8 (03)			Neurology Research
	RPC RP2108A (04)			Laboratory
	RPC RP9830B (05)			Neurology
	RCS TR680 (06)			Medical Research
	RIC 80 *			Medical Research
	RCS TR680 *			Medical Research
	DCE NOV43 *			Nuclear Medicine
Montrose, NY (620)	REC POP8 (01)			Medical Research
	NEI 2260 (03)			Psychology
	REC A3 (05)			Nuclear Medicine
	RCS TR680 *			Educational Therapy
	HEA 89 *			
Mountain Home, TN (621)	DPE 1802 (01)			Supply
	RPC RP9815 (02)			Radiology
Rustoke, OK (623)	MMH 2200 (01)			Pulmonary Medicine
Nashville, TN (626)	DEQ POP1103 (01)			Medical Research
	DCE NOV43 (02)			Nuclear Medicine
	DEQ POP1103 *			Laboratory
	DCE NOV1200 *			Nuclear Medicine
New Orleans, LA (629)	MMH 2200 (01)			Medical Research
	RCS TR680 (02)			Medical Research
Newington, CT (627)	DEQ POP1134 (01)			Nuclear Medicine
	DCE NOV43 (02)			Pulmonary Medicine
	DEQ POP8 *			Behavioral Research
New York, NY (630)	DEQ POP1103 (02)			Medical Research
	DEQ POP1134 (01)			Laboratory
	DEQ POP1160 (04)			Medical Service
	CHM 2001 *			

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STATION (Station #)	SYSTEM/MODEL/TID	REMARKS	ACQUISITION/NOTES	PRIMARY USE
New York, NY (790) (Prosthetic Center)	TEL 180 (S100) (01)			Engineering
North Chicago, IL (556)	DHL PC83 (01)			Medical Administration
	RPC 9830A (02)			Nuclear Medicine
	BUR 880 (03)			Medical Administration
	RPC 9830 (04)			Medical Research
	RPC RP9830A (05)			Medical Research
	MAN 706 (06)			Medical Research
	APM 2 (07)			Medical Research
	RPC RP9815A (08)			Medical Research
	MAN PC11 (09)			Clinical Lab
	CROM DRS-1 *			Multiple Use
	RPC 78705A *			Engineering
	DEC NCRA3 *			Patient Monitoring Patient Monitoring
Northport, NY (632)	DEC POP8 (01)			Medical Research
	DEC PC812 (02)			Medical Research
	DEC A3 (03)			Nuclear Medicine
	DEC 1070 *			Neurology
	TEX 4151 *			Medical Research
Oklahoma City, OK (635)	RPC RP2100A (01)			Medical Research
	RPC RP2100A (02)			Medical Research
	DEC NCRA3 (03)			Nuclear Medicine
	DEC POP15 (04)			Medical Research
	DEC POP1170 (05)			Medical Administration
	DEC POP1103 (06)			Clinical Lab
	DEC POP8E (07)		CRIP	Laboratory
	DEC POP12 (08)			Medical Research
	DEC NCRA1200 *			Cardiology Research
	DEC T7680 *			Radiology
	MAN 700 *			Cardiology Research
Cuba, NE (636)	IBM 1620 (01)			Medical Research
	DEC POP1134 (02)			Nuclear Medicine
	DEC POP1134 *			Patient Monitoring
	RPC RP85 *			Laboratory
	DEC POP1105 *			Cardiology
Falo Alto, CA (640)	DEC POP11A (01)			Medical Research
	DEC POP11A (02)			Medical Research
	DEC POP1140 (03)			Medical Research
	TEL MCR105 (04)			Medical Research
	TEL MCR120 (07)			Medical Research
	MCR 8130 (09)			Medical Research
	RPC RP9830 (10)			Medical Research
	DEC V111780 (11)			Pathology
	RPC RP9845 (12)			Medical Research
	DP6 8080 (13)			Medical Research
	RPC RP9836A (14)			Medical Research
	RPC RP9825A (15)			Medical Research
	RPC RP2000 (16)			Medical Research
	TEX 4051 (17)			Medical Research
	APM 2 (19)			Blind Rehab
	DEC T7680 (20)			Medical Research
	DEC POP1110 (21)			Rehab Medicine Medical Research

STATION (Station #)	SYSTEM, MODEL (ID#)	FORMS	REQUISITION/NOTES	PRIMARY USE
Alamogordo, CA (640)	DEQ POP1134 (22)	=====		Medical Research
	CMW 2001 (23)	=====		Medical Research
	APM 2 (24)	=====		Medical Research
	DEQ POP1134 (25)	=====		Medical Research
	DEQ POP1134 (26)	=====		Medical Research
	IEL MC1120 (27)	=====		Rehab Engineering
Bry Point, MD (641)	MMI 720C (01)	=====		Medical Research
	NDE TR680 (02)	=====		Pavlovian Research
Chula, AZ (644)	APM 2 (01)	=====		Medical Research
Lawrenceville, GA (642)	DEQ POP1103 (02)	=====		Medical Research
	DEQ POP1134 (04)	=====		Medical Research
	DEQ POP1103 (05)	=====		Medical Research
	TRK 8510A (07)	=====		Medical Research
	DEQ POP1103 (08)	=====		Medical Service
	MDZ A2 (09)	=====		Nuclear Medicine
Lebanon, PA (645)	HPC HP9835 *	=====		Medical Research
Lebanon, PA (646) (University Dr.)	DEQ POP8 (01)	=====		Medical Research
	DEQ POP1145 (03)	Leased		Medical Research
	DC NOVA210 (05)	=====		Nuclear Medicine
	DEQ HPC111 *	=====		Medical Research
Leland, OR (648)	HPC HP9825A (01)	=====		Pulmonary Medicine
	HPC HP9825A (02)	=====		Pulmonary Medicine
	TEX 4051 (03)	=====		Medical Research
	MMI 720C (04)	=====		Medical Research
	HPC HP9825 (05)	=====		Clinical Pathology
	HPC 9830A (07)	=====		Clinical Pathology
Scott, AZ (649)	HPC HP9810 (01)	=====		Laboratory
	DC NOVA312 (02)	=====		Medical Research
	TEX 4051 (03)	=====		Medical Research
Tidewater, RI (650)	DEQ POP1140 (01)	=====		Nuclear Medicine
	HDA MULLA (03)	=====		Mental Health
Waco, TX (654)	DEQ POP1140 (01)	=====		Fiscal
	DEQ POP1134 (NAP) (02)	=====		Medical Administration
	NDE TR680 *	=====		Medical Research
Waco, TX (652)	DC 820 (01)	=====		Medical Research
	IEL 80 (02)	=====		Surgery
	HPC HP1000 (03)	=====		Medical Research
	DC BCL6250 (04)	=====		Medical Research
	TEX 990 *	=====		Medical Research
	APM 2 *	=====		Rehabilitation Medicine

Veterans Administration Medical Centers

STATION (Station #)	SYSTEM/MODEL (YOB)	REMARKS	ACQUISITION/NOTES	PRIMARY USE
Alton, VA (558)	AGE TMS80 (01)			Medical Research
Alt Lake City, UT (440)	DEQ POP1170 (01)			Psychology
	DEQ MDNC11 (02)			Medical Service
	DEQ POP1120 (03)			Nuclear Medicine
	DEQ POP1103 (04)			Surgery
	DEQ POP1103 *			Medical Research
	DEQ POP1103 *			Medical Research
	DEQ POP1123 *			Medical Research
	RFC HP45 *			Pathology
	APM 2 *			Medical Research
San Antonio, TX (671)	DEQ POP1230 (01)			Psychology
	DEQ MCNA830 (02)			Medical Research
	MCQ MESS130 (03)			Nuclear Medicine
	RFC 9830A (04)			Anesthesiology
	RFC 9830A (05)			Anesthesiology
	DEQ MCNA830 (06)			Cardiology
	IBM SY57 (07)			Engineering
	DEQ MCNA210 (08)			Pulmonary Medicine
	DEQ BEL1P02 (09)			Medical Research
	DEQ MCNA2 (10)			Nuclear Medicine
	MDX A2 (11)			Nuclear Medicine
	MAN 720C (12)			Pathology
	MAN 720C (13)			Nuclear Medicine
	DEQ POP1103 (14)			Medical Research
	REA W68 (15)			Bio Medical Eng
	MDT EXOCESR (17)			Medical Research
	MAN 700B (18)			Medical Research
San Diego, CA (664)	RFC PP2100A (01)			Psychology
	RFC HP2100A (02)			Surgery
	RFC HP2100A (04)			Psychiatry
	DEQ POP8 (05)	Funded		Neurology Research
	NDI 812 (06)			Nuclear Medicine
	DEQ S230 (07)			Nuclear Medicine
	RFC RP2100 (08)			Cardiology
	DEQ POP8 (09)			Neurology Research
	NDI 4410 (10)			Nuclear Medicine Research
	DEQ POP8 (11)	Funded		Pathology Research
	DEQ POP8 (12)			Laboratory
	DEQ S200 (13)			Pulmonary Medicine
	DEQ POP8 (14)			Laboratory
	TCX 4051 (16)			Cardiology
	RLS TMS80 (17)			Neurology Research
	RFC HP1000 (19)			Medical Research
	CIM 2001 (20)			Rehabilitation Medicine
	TEL 8080 (21)			Anesthesiology Research
	TEL 8080 (22)			Anesthesiology Research
	TEL 8080 (23)			Anesthesiology Research
	TEL 8080 (24)			Anesthesiology Research
	TEL 8080 (25)			Anesthesiology Research
	RFC RP9810A (27)			Anesthesiology
	RFC RP9810A (28)			Surgery
	RFC RP9810A (29)			Surgery
	RFC RP9810A (30)			Laboratory
	RFC RP9810A (31)			Surgery
	RFC RP9810A (32)			Psychology
	RFC RP9810A (33)			Psychology
	RFC RP9810A (34)			Surgical Research
	RFC RP9810A (35)			Medical Research

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STATION (Station #)	SYSTEM/MODEL (ID#)	REMARKS	ACQUISITION/NOTES	PRIORITY USE
San Diego, CA (664)	RFC HP9810A (36)			Medical Research
San Diego, CA (664)	HPF POLY88 (37)	Funded		Surgical Research
San Diego, CA (664)	DEQ POP11 (38)	Funded		Neurology Research
San Diego, CA (664)	DEQ KDC11 (39)			Medical Research
San Diego, CA (664)	TEX 4052 (40)			Laboratory
San Diego, CA (664)	CNO 22 (41)			Anesthesiology Research
San Diego, CA (664)	STP 4000 (42)			Medical Research
San Diego, CA (664)	RFC HP5400 (44)			Neurology
San Diego, CA (664)	DEQ POP11 (45)			Surgery
San Diego, CA (664)	DEQ POP11 (46)			Surgery
San Diego, CA (664)	APW 2 (48)			Medical Research
San Diego, CA (664)	DEQ POP1123 (49)	Funded		Cardiology
San Diego, CA (664)	MCU VDSII (50)	Funded		Medical Research
San Francisco, CA (662)	DEQ POP12 (01)			Speech Pathology
San Francisco, CA (662)	DEQ POP12A (02)			Psychiatry Research
San Francisco, CA (662)	DEQ POP1135 (03)			Cardiology
San Francisco, CA (662)	DEQ POP1140 (05)			Nuclear Medicine
San Francisco, CA (662)	DEQ POP1140 (06)			Nuclear Medicine
San Francisco, CA (662)	DEQ POP1140 (07)			Nuclear Medicine
San Francisco, CA (662)	DEQ POP1103 (08)			Research
San Francisco, CA (662)	DEQ POP1105 (09)			Nuclear Medicine
San Francisco, CA (662)	DEQ POP1134 (10)			Cardiology
San Francisco, CA (662)	DEQ POP1110 (11)			Nuclear Medicine
San Francisco, CA (662)	DEQ POP1170 (12)			Pathology
San Juan, (455)	REC AJ (01)			Nuclear Medicine
Seattle, WA (663)	DEQ POP1144 (01)			Medical Research
Seattle, WA (663)	DEQ POP82 (02)			Medical Research
Seattle, WA (663)	DOC NOV210 (03)			Nuclear Medicine
Seattle, WA (663)	DOC NOV2200 (04)			Nuclear Medicine
Seattle, WA (663)	TEL 8080 (06)			Medical Research
Seattle, WA (663)	DOC NOV2200 (07)			Nuclear Medicine
Seattle, WA (663)	RFC HP9810A (08)			Pulmonary Medicine
Seattle, WA (663)	RFC HP9810A (09)			Renal Research
Seattle, WA (663)	DEQ KDC11 (10)			Medical Research
Sepulveda, CA (665)	IBM 1130 (01)			Medical Research
Sepulveda, CA (665)	DEQ POP12 (02)			Medical Research
Sepulveda, CA (665)	RFC HP3000 (03)			Medical Research
Sepulveda, CA (665)	APW 2 (04)			Geriatric Research
Sepulveda, CA (665)	APW 2 (05)			Medical Research
Sepulveda, CA (665)	APW 2 (06)			Memory Research
Sepulveda, CA (665)	MAN 720C (07)			Medical Research
Sepulveda, CA (665)	APW 2 (08)			Neurophysiology Research
Sepulveda, CA (665)	DEQ KDC11 (09)			Medical Research
Sepulveda, CA (665)	MAN 2200T (10)			Medical Research
Sepulveda, CA (665)	MAN 600 (11)			Medical Research
Sepulveda, CA (665)	RFC HP9810A (12)			Medical Research
Sepulveda, CA (665)	RFC HP9810A (13)			Medical Service
Sepulveda, CA (665)	RFC HP9810A (14)			Medical Service
Sepulveda, CA (665)	RFC 79680 (15)			Medical Research
Sepulveda, CA (665)	APW 2 (16)			Dental Research
Sepulveda, CA (665)	APW 2 (18)	Funded		Renin Biochem. Research
Sepulveda, CA (665)	APW 2 (19)			Medical Research
Sepulveda, CA (665)	FILE 15111/2			Medical Research

DVA VA Inventory of Computers
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STATION (Station #)	SYSTEM/MODEL (ID#)	REMARKS	REDUPLICATION/NOTES	PRIMARY USE
Newport, LA (667)	WAI MCS20 (01)	=====		
	RPC RP9815 (02)	=====		Medical Research
	RPC RP9835A (03)	=====		Nuclear Medicine Medical Research
St. Cloud, MN (656)	APM 2 (01)	=====		Psychology
	IBM 4953 *	=====		Engineering
St. Louis, MO (657)	NDI 812 (01)	=====		Nuclear Medicine
	DOC NOV82 (02)	=====		Nuclear Medicine
	RPC RP9835A (04)	=====		Medical Service
	VEG 88 *	=====		Radiology
	DEQ POP134 *	=====		Learning Resources Service
	NEC 15P-4P-303*	=====		Engineering
Syracuse, NY (670)	DEQ POP1134 (01)	=====		Medical Research
	DOC NOV8210 (02)	=====		Nuclear Medicine
	DEQ LS111 (03)	=====		Medical Research
	RCS TR680 (04)	=====		Medical Research
	WAI 2200B *	=====		Medical Research
Tampa, FL (673)	DEQ POP12 (01)	=====		Nuclear Medicine
	DEQ POP8E (02)	=====		Engineering
	DEQ POP8 (03)	=====		Nuclear Medicine
	MLC FOR3 (04)	=====		Nuclear Medicine
	RCS TR680 (05)	=====		Medical Research
	RCS TR680C (06)	=====		Medical Research
	RCS TR680 (07)	=====		Medical Research
	MLC POP3 (08)	=====		Nuclear Medicine
	APM 2 (09)	=====		Psychology
	WAI 720C (10)	=====		Medical Research Service
	DEQ POP1104 (11)	=====		Laboratory
	PLS MLC02 (12)	=====		Medical Research
	APM 2 *	=====		Lab Analysis
Temple, TX (674)	NEC MLC80 (02)	=====		Radiology
	DEQ POP8E (03)	=====		Pulmonary Medicine
	RPC RP9825 (04)	=====		Clinical Lab
	NEC MLC1A (05)	=====		Radiology Research
	TEX 4052 (06)	=====		Radiology Research
	OSB 1 *	=====		Lab Analysis
Texas, ME (402)	DEQ POP1130 *	=====		Lab Information Management
Tomb, MI (676)	BUN L6000 (01)	=====		Medical Administration
Tucson, AZ (678)	RPC RP9100B (01)	=====		Medical Research
	RPC RP2100 (02)	=====		Nuclear Medicine
	RPC 9830 (03)	=====		Clinical Lab
	RPC 9830 (04)	=====		Medical Research
	RPC RP2100 (05)	=====		Nuclear Medicine
	RPC 9830 (06)	=====		Clinical Lab
	RPC 9825 (07)	=====		Clinical Lab
	JTD 716 (08)	=====		Medical Administration
	RPC RP9830A (09)	=====		Clinical Lab
	NEC A2 *	=====		Nuclear Imaging

STATION (Station #)	SYS/DA/MODEL (ID#)	REMARKS	ACQUISITION/NOTES	PRIORITY USE
Tuskegee, AL (680)	DEQ POP8E (01)			Audiology
	RPC 9830A (03)			Laboratory
Waco, TX (685)	RGE 79680 (01)			Rehab. Medicine
Washington, DC (688)	VAR V76 (01)	Funded		Cardiology
	VAR V73 (02)	Funded		Cardiology
	VAR V8P-7.2 (03)	Funded		Cardiology
	RGE 79680 (04)			Medical Research
	DEQ POP1134 (07)			Primary Care/Endocrinology
	DEQ POP1134 (08)			Tumor Registry & Patient
	DEQ MD4C13 (09)			Locator
	RPC RP5400 (10)			Medical Research Intensive Care
West Haven, CT (689)	DEQ POP12 (01)			Neuropsychology
	DEQ POP8E (03)			Neurology Research
	DEQ POP8E (04)	Funded		Clinical Lab
	DOC H2V840 (05)			Patient Monitoring
	DEQ POP1160 (06)			Neurology Research
	DOC ECLS130 (07)	Funded		Laboratory
	APM 2 (08)			Medical Research
	APM 2 (09)			Medical Research
	APM 3 (10)			Medical Research
	DOC ECLS130 (11)			Medical Research
	DOC ECLS130 (12)			Neurology
	APM 2+ *			Laboratory
West Woodbury, MA (690)	DEQ POP8L (01)			Medical Research
	DEQ POP1140 (02)			Nuclear Medicine
	DEQ POP1105 (03)			Cardiology
	RPC RP9845 (04)			Clinical Lab
	WIC NTC80 (05)			Rehabilitative Medicine
	DEQ POP1105 *			Surgical
Wilmington, DE (440)	RGE 79680 (01)			Surgery
	APM 2 (02)			Dentistry
	DEQ POP8E *			Pathology
	MOD A2 *			Nuclear Medicine
	OCU SYL *			Pulmonary Medicine
Wilkes Barre, PA (693)	MOD 4310A *			Nuclear Medicine
	SYL 1000 *			Laboratory
Woonsocket, RI (695)	DEQ POP8 (01)	Funded		Medical Research
	DEQ POP12 (02)			Cardiology
	DEQ RAPORT (03)	Leased		Cardiology
	DEQ POP1110 (04)			Medical Research
	WAN 2200 (05)			Medical Research
	DOC S230 (06)			Medical Research
	WAN 2200 (07)			Nuclear Medicine
	DEQ LST11 (08)			Medical Research

VA Inventory of Computers
Veterans Administration Medical Centers

NOTES:

1. Systems shown with an "*" as the ID# have been reported by the stations as being installed however, additional information is required before it can actually be placed in the VA/GSA ADP Inventory.
2. The data shown in this report is based upon information directly reported by the station. Potential additions are continually being researched and will be added to the Inventory when verified.
3. All systems are installed and owned unless otherwise indicated.
4. "Funded" refers to equipment paid for by an outside grant (no VA funds).
5. "SGD" in the System Column refers to equipment built by station personnel using parts from various manufacturers.

M E D I C A L C E N T E R
S U M M A R Y T O T A L S

PURCHASED.....	653
LEASED.....	4
FUNDED BY GRANT.....	19
TOTAL INSTALLED.....	676

VA-WIDE TOTAL.....	732
DATA PROCESSING CENTERS,	
CENTRAL OFFICE AND MEDICAL	
CENTERS INCLUSIVE	

NOTE: This Inventory complies with GSA ADP Management Information System Reporting Requirements (FPMR 101-36.5). Some of the computers are embedded in medical equipment, however, they could be separated from the equipment and used as a general purpose computer.

ABR	Abbott Corporation
ACA	ADAC Corp.
ADU	Addressograph Multigraph Corp.
APM	Apple, Corp.
ART	Arturis
BCH	Burroughs, Corp.
CAJ	Computer Automation
CBM	Commodore Business Machines
CDC	Control Data, Corp.
CCN	Centronics Data Computers Corp.
CPL	Computer Land
CRO	Cromenco Corp.
CSD	Cyborg, Corp.
DEC	Digital Equipment Corporation
DGL	Data General, Corp.
DPE	Datapoint Corp.
DDN	Datun, Inc.
EFM	Electronics for Medicine
EEL	Electronic Associates, Inc.
FTN	Firmag Corp.
GEL	General Electric Co.
HSA	Heathkit
HON	Honeywell
HPC	Hewlett Packard, Corp.
IBM	International Business Machines Corp.
IEL	Intel Corp.
IFE	Infomatrix, Inc.
IDL	Idolac Corp.
IMS	International Memory Systems
INT	Interac Corp.
ITD	Interdata
JAC	Jacquard
LAM	Lanier
MDU	Micro Solution, Inc.
MED	Medical Data Systems
MEC	Megadata Computer & Communications
MIS	MTS
MMH	3M Corp.
MOT	Motorola, Inc.
MCE	Marquette
MIC	Nuclear of Chicago
NCR	National Cash Register Co.
NDI	Nuclear Data, Inc.
NIC	Nicolet Instrument, Corp.
PAC	Pare Electronics
PAD	Paradyne Corp.
PEE	Perkin Elmer Corp.
PLS	Plasma
PWP	Polymorphic
RAY	Raytheon Computer Data System Co.
ROS	Radio Shack
SIE	Siemens
SMI	Standard Memories, Inc.
STP	SPECTOR Physics Company
TEL	Tektronix
TEX	Texas Instruments, Inc.
TGA	Technicare Corp.
TOK	Terak Corp.
TTT	Technicon TST Corp.
VNA	Varian Data Machines
WAG	Wang
WDR	Weststream
ZEL	Zilog, Inc.

*All 3 letter codes used are the official GSA manufacturer identification codes. Codes not having three letters have not been provided by GSA as yet.

APPENDIX B

IMPLEMENTATION SCHEDULE

COMIS* SYSTEM ENHANCED PHARMACY SUBSYSTEM

VAND	VARE	1982				1983						
		SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	AUG
17	LAKESTOWN, IL	* (45 days delivery)										
	WESTSTOWN, IL	Delivery	Delivery	Delivery	Delivery	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining
	NORTH CHICAGO, IL	Delivery	Delivery	Delivery	Delivery	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining
	CHICAGO, IL	Delivery	Delivery	Delivery	Delivery	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining
18	MOORE, WI	Delivery	Delivery	Delivery	Delivery	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining
19	WALDE PARK, OH	(60 days delivery)	Delivery	Delivery	Delivery	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining
	SPRINGFIELD, OH	Delivery	Delivery	Delivery	Delivery	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining
	CANTON, OH	Delivery	Delivery	Delivery	Delivery	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining
20	MIRIAMANGOLIS, NH	Delivery	Delivery	Delivery	Delivery	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining
	ST. PAUL, NH	Delivery	Delivery	Delivery	Delivery	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining
21	BRENTWOOD, CA	(120 days delivery)	Delivery	Delivery	Delivery	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining
	LONA LINDA, CA	Delivery	Delivery	Delivery	Delivery	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining
	LONG BEACH, CA	Delivery	Delivery	Delivery	Delivery	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining
	LUNG BEACH, CA OPC	Delivery	Delivery	Delivery	Delivery	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining
	SEVILLA, CA	Delivery	Delivery	Delivery	Delivery	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining
	WALSHORTH, CA (Mailout)	Delivery	Delivery	Delivery	Delivery	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining
	WALSHORTH, CA OPC	Delivery	Delivery	Delivery	Delivery	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining
	SANTA BARBARA, CA	Delivery	Delivery	Delivery	Delivery	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining	ATraining

* The COMIS system was formerly known as the Enhanced Pharmacy System and includes subsystems for admissions, transfers and discharges; enhanced pharmacy; and clinic scheduling.

THIS SCHEDULE IS CURRENTLY PENDING THE APPROVAL OF THE DM&S MEDICAL INFORMATION RESOURCES MANAGEMENT OFFICE (MIRMO)

APPENDIX C

DHCP PLAN (1982-83).

This document is currently under review in the Department of Medicine and Surgery and is subject to change.

EXECUTIVE SUMMARY

DECENTRALIZATION DECISION

The focus of this document is on preliminary planning for the Department of Medicine and Surgery's Decentralized Hospital Computer Program (DHCP). This program, based on the Administrator's Executive Order of February 18, 1982, is aimed at improving the quality of patient care by increased decentralized technology in VA Medical Centers (VAMCs). Since February, efforts have been concentrated on the development of a strategy and plan to implement the Administrator's decision to decentralize and on the creation of an organizational structure to manage this process.

The ADP decentralization approach which we are implementing recognizes the need for a formal process for accountable participation and coordination among hospitals in the development and use of computer systems. It provides a balance between those functions which can best be performed in the medical centers and those functions which are necessarily the responsibility of agency management. Our decentralization policy provides for the location and operation of computers in the medical centers, the coordinated development of a standard "CORE" of computer programs at six selected medical centers, and the overall direction of ADP activities by the Chief Medical Director.

This is an innovative approach representing a significant departure from previous highly-centralized efforts. The critical needs in our hospitals, however, warrant this action.

DECENTRALIZED IMPLEMENTATION

Our immediate goal is to establish a pilot test of decentralization using field developed software. This will involve the shifting of some computer resources to the medical centers. The VA owns a number of minicomputers originally purchased for pharmacy automation which are not currently in use and are therefore available. Medical center personnel have developed a variety of software packages which can, in the short term, provide data processing support for essential hospital activities—medical administration, pharmacy and clinical laboratory (the CORE computer programs). These resources, along with the hardware augmentation and systems software included in the pending procurement for the pilot test will be mobilized to partially automate an initial group of 30 medical centers by the end of this year. It is our intent not only to equip the hospitals with a standard software CORE supporting priority medical functions, but also to set aside local system capability for the aggregation of information to meet DMS management requirements and for use by facility staff to accommodate unique local needs.

PILOT TEST

The initial installation of selected CORE software will serve as a pilot test to demonstrate the effectiveness and transportability of our field developed systems. It will also provide immediate relief where it is most urgently needed and will allow us time to pursue our long range objective of reviewing, testing, and evaluating a wide array of both private sector and VA developed hospital systems.

CONCURRENT DM&S ADP INITIATIVES

Included among those systems to be evaluated will be the Enhanced Pharmacy System which incorporates both inpatient and outpatient pharmacy activities along with inventory control and admissions/discharge/transfer functions. This application will be completed by the vendor and pilot tested at the Hines Medical Center. We have also initiated a project called Integrated Hospital Systems (IHS) which will result in the acquisition of three separate commercially-developed hospital systems to be demonstrated in three selected medical centers. We will compare the vendor systems with enhanced versions of our own operational field-developed software and centrally developed software such as the Enhanced Pharmacy System. To this end we have contracted with the consulting firm of Deloitte, Haskins and Sells to assist us in developing an evaluation methodology for determining which options (functional or integrated, commercially or in-house developed) would be most cost-effective and of maximum value to the agency's medical center network.

We envision this decentralization effort as an opportunity to gain experience in using recent technological advances such as high-level, interactive programming languages and sophisticated data base management techniques, to acquire inexpensive and more powerful minicomputer hardware, to try out flexible systems development methods, and to take full advantage of the expertise and enthusiasm of our medical center personnel. More than hardware and software, it is the direct involvement of system end users that will ensure the success of this endeavor.

PLAN ORGANIZATION

The Background section of this document presents a brief description of DM&S ADP prior to the February 18 Executive Order. The provisions of the Executive Order and the actions initiated as a result are outlined. Integration of the Decentralized Hospital Computer Program (DHCP) into the DM&S overall ADP strategy is described and illustrated.

The remaining sections deal with the specifics of the DHCP. Major features are identified including objectives, administrative elements, long range goals for utilization of hospital computers, and our implementation strategy. Special emphasis is placed on the set of activities described as "Phase I," highlighting the associated FY82 procurement.

BACKGROUND

HISTORY

The Department of Medicine & Surgery (DM&S) uses extensive resources in furnishing data processing support for hospital operations, medical research and management information reporting. In Fiscal Year 1981 more than \$29 million was expended for DM&S ADP support, including more than \$23 million to support hospital operations.

Despite such large ADP expenditures, most VA medical centers lack ADP support for their most critical functions — clinical and administrative activities such as laboratory, pharmacy and medical administration. Most of the ADP expenditures each year are used to provide support for the "business" activities of the medical centers, such as supply, engineering, and fiscal accounting. There are a number of different systems which support functions such as pharmacy, clinical laboratory, cardiovascular monitoring, mental health, and drug dependency. However, the number of hospitals served is small and the quality of the ADP support varies. Many of the medical centers are totally lacking in ADP support for their critical patient care functions. Most of the centers with some ADP support are limited by the size of the equipment and lack of adequate funding.

USER DEVELOPED SOFTWARE

Despite the lack of adequate equipment and staff, ADP systems have nevertheless been developed in VA medical centers. VA medical center personnel have used a methodology in which the hospital personnel are intimately involved in defining needs and in which users actively participate with software developers. Typically, the system is developed in the hospital setting. The experience of the VA in the use of this methodology is that responsive and flexible systems result. An example of such a system is the Automated Hospital Information System (AHIS) at the VA Medical Center, Washington, D.C. Although now restricted by obsolete equipment, the AHIS is a highly successful integrated ADP system supporting medical administration, clinical laboratory, radiology, dietetics, and other functions.

Other hospital-based systems include the VA's Honeywell Patient Care System (supports medical administration and clinical laboratory at 8 sites), the Psychiatric Pre-Assessment System at Salt Lake City, UT, the Psychodiagnostic Assessment System at Bay Pines, FL, and the pharmacy systems at Dallas, TX and Birmingham, AL. These systems vary in size, complexity and method of development (VA personnel or vendor) but share the common characteristic of operation inside the hospital and active involvement of users in the development stage.

CURRENT SITUATION

Although the VA has had many successful ADP projects and although a great variety of software has been developed, the agency has not succeeded in achieving the goal of adequate support for all hospitals for critical functions. The most important functions of the medical center — those which will free staff from routine work so that they may spend their time on patient care — remain largely without automation.

The Administrator's Executive Order of February 18, 1982 is based on the findings of an ADP review team under the direction of the Deputy Administrator. Beginning in October, 1981, this review team has been making recommendations for ways to improve the management of ADP. These findings and recommendations reflect the problems which the agency has experienced: lack of adequate participation by the users, proliferation of many different software packages for the same function, duplication of effort, lack of sharing of software packages, and — most critically — the fact that great effort and expense have resulted in very little ADP support for the most important functions of the medical centers.

The findings of the Deputy Administrator's review team echo those of the General Accounting Office study ("VA Must Strengthen Management of ADP Resources to Serve Veterans' Needs", dated July 16, 1980), that ADP support will be successful only if there is more user involvement in the development process and if the user department assumes responsibility for management of the program. DM&S must be accountable for results, oversee and manage software development, and involve hospitals in formulating requirements.

EXECUTIVE ORDER TO DECENTRALIZE

The decentralization policy implemented by the Administrator's Executive Order is intended to address the problems experienced in providing ADP support to DM&S. The goal is to provide clear management authority and responsibility in the user department — DM&S — and to provide for more participation by medical centers. The ADP decentralization policy is a balanced approach which assigns responsibilities to the level of management where they can best be performed. This policy provides for the location and operation of computers in hospitals, the development of standard software in specialized centers located in 6 medical centers, and overall direction from the DM&S Central Office.

The Executive Order initiated several task forces to implement the decentralization policy:

1. Project Management Task Force. This group developed the plan for acquiring hardware and software to implement the first phase of the Decentralized Hospital Computer Program (DHCP) in Fiscal Year 1982.
2. Policy and Procedures Task Force. This group prepared the policy document which expands and explains the policies outlined in the Executive Order.
3. Management Information Requirements Task Force. This group studied the needs of DM&S managers for information and looked for ways to eliminate duplicative and unnecessary reporting.

Finally, the Executive Order has resulted in the establishment of a new organization in DM&S Central Office to act as the central control point for all information and ADP activities. By integrating several different management groups into one Medical Information Resources Management Office (MIRMO), DM&S has created a staff office to the Chief Medical Director which will implement his directives. The MIRMO will direct the process of decentralization in DM&S.

ACTIONS UNDERWAY

Although the primary thrust of the Executive Order was to shift computer resources to medical centers quickly to relieve their critical need for ADP support, the decentralization which was ordered does not stand alone as a data processing approach. Three parallel ADP activities will be pursued concurrently with the shift of computer resources to the hospitals. These parallel tracks are:

1. Enhanced Pharmacy. The currently-operational Advanced Pharmacy centralized ADP system will be upgraded to include inpatient pharmacy and inventory control. Upon completion of testing and certification, the Enhanced Pharmacy will be installed in 21 VA medical centers.
2. Integrated Hospital System (IHS). The DM&S will acquire 3 separate commercially-developed hospital information systems to be pilot-tested at 3 medical centers.
3. Consultant study. Deloitte, Haskins and Sells will develop an evaluation methodology for use by the VA in determining the most cost effective software (commercial or in-house development). They may also be engaged to assist the VA in these evaluations as a contract option.

The decentralization policy thus provides for both a temporary solution to the most critical hospital ADP needs and a pilot test and demonstration of software which has been developed in-house — on the initiative of local hospital staff — during the past 4 years. This policy will also provide for parallel demonstrations of different software developed according to different methodologies.

Figure 1 illustrates the DM&S plan for demonstrating each of the three approaches and for evaluating them so that informed decisions can be made on the best and most cost effective approach(es) to follow in ADP development. "DHCP" represents the demonstration of VA Medical Center-developed software. The Fiscal Year 1982 acquisition will support the initial phase of this demonstration. "Deloitte, Haskins and Sells" represents the development of a methodology by the consultant which the VA will use to evaluate the demonstrations. "Integrated Hospital Systems" represents the demonstration of 3 different commercially-developed hospital-based systems in 3 medical centers. "Enhanced Pharmacy" represents the expansion of the current pharmacy system and the demonstration of it in 21 medical centers. Finally, the chart line for "DM&S Decision for Implementation" represents the final evaluation of the three software approaches and the products which have resulted. It is expected that all three different demonstrations will proceed on parallel tracks and that, as the evaluation methodology becomes available, these development approaches will be compared. It is planned that the agency will be prepared for implementation decisions by early Fiscal Year 1985.

DECENTRALIZED HOSPITAL COMPUTER PROGRAM (DHCP)

MAJOR FEATURES OF THE PROGRAM1. ObjectivesGeneral Description

Implementation of the Decentralized Hospital Computer Program (DHCP) will involve the rapid deployment of computers to VA medical centers to meet critical needs, addressing priority clinical and administrative functions. User-responsive software, developed in the hospitals, will be installed. The individual medical center directors will have a significant role in the selection of applications and in the operation of both the hardware and software. They will also be held accountable for successful utilization of these resources.

There is significant potential in this program for improving our overall health care delivery system. The following are our primary objectives:

- More efficient use of employee time (both administrative and direct patient care).
- Increased patient satisfaction. This will result from a decrease in normal waiting time. Also, the veteran will no longer be required to repeat the same information to all his various contacts within the hospital.
- Elimination of much of the manual data gathering, calculating and reporting for inpatient, outpatient, and hospital-wide statistical reporting.
- Increase in management control through timely identification of out-of-line situations.
- Provision of management statistics for higher level management and oversight groups. By utilizing the concept of on-line data capture in the day-to-day operation, it is possible to virtually eliminate the double recording and counting of various statistical and process parameters required by the VA Central Office centralized reporting systems. It is our goal to capture on a routine basis most of the required data.
- Decreased errors. The on-line, interactive nature of these systems allows the ability to identify and correct errors at the time they are made rather than in a retrospective fashion.
- Improved communication among the hospital's functional areas.
- Improved recruitment and retention of quality personnel based on the opportunity for staff to utilize modern technology.

Phase 1 Anticipated Improvements

For every individual functional area, specific improvements can be anticipated. In the areas of Medical Administration, for example, computer support will greatly increase the ability of the Medical Administration staff to respond in a timely manner to the various and often simultaneous requests for action and assistance in the care of patients. Examples of the many benefits to be expected from the installation of patient registration, ADT, and scheduling include the following:

- Reduction in the ordering of patients' records for routinely needed information by centralizing the data for hospital-wide access using CRT's.
- Improved reporting of lab and other test results to the correct treatment area and staff by providing immediate information about a patient's current ward or clinic location and treating physician.
- Improved continuity of patient care by providing the ability to more effectively schedule appointments to the specific physician treating the patient.
- Increased scheduling of future appointments for the same visit date by providing information about existing appointments to the scheduling clerk.
- Reduction in the number of broken appointments by notifying patients prior to the visit date through appointment reminder letters which list a telephone number to call for appointment cancellation or rescheduling purposes.
- Improvement in administrative processing activities by identifying items that require further action on a priority basis or through follow-up.
- Increased control and knowledge of inpatient flow and bed assignments which will greatly improve the ability to match the needs and desires of the patient with the facilities available in the hospital.
- Potential cost containment through the improvement of staff efficiency and reduction in staff manhours currently expended on manual data collection.

The other initial CORE application, Outpatient Pharmacy, also offers a multitude of potential benefits. Some of its most significant features include:

- More accurate and timely patient information such as detailed medication profiles, drug allergies and possible drug interactions.
- Reduced time in filing, retrieving and screening patients' medication documents.
- Reduction in clerical tasks. The system produces prescription labels, mailing labels, dispensing records, refill forms, renewal forms, and many required reports including controlled substance report, drug issue report and drug history.

The comprehensive plan to be completed in September, 1982 will provide more detailed benefit projections.

2. Administration

Significant changes have been taking place in information technology over the past few years. The development of economical minicomputers that have significant computing power has encouraged the approach of placing computer resources in the hands of users located in field stations remote from agency headquarters. It is much simpler to process data where it is used or where it occurs and then consolidate it into summaries for central use. This concept, often referred to as distributed processing, forms the basis for the DHCP.

The distributed approach promises to be the most responsive to user needs not only because the computer is located in the hospital but also because software will be developed in the medical center environment. It will, however, require strong centralized direction and control. Only with effective involvement of top management and the overall coordination of a centrally established review and control element will we be able to ensure that there is a solid framework of plans, policies, standards, and guidelines to guard against waste and inefficient use of our ADP resources.

To this end, the following organizational structure and division of responsibility has been established:

- Deputy Administrator

The Deputy Administrator has responsibility for agency-wide information resources management. This responsibility includes approval and oversight of all information and data processing activities.

- Chief Medical Director

The responsibility to direct the overall decentralization process, to ensure optimal use of resources, to provide guidance, to plan and budget for total ADP support in DM&S is vested in the Chief Medical Director.

- Medical Information Resources Management Office (MIRMO)

The newly established MIRMO represents the consolidation of all DM&S information and data processing management functions into one VA Central Office element. This office provides the execution of the Chief Medical Director's ADP policy and is also responsible for the identification and management control of information reporting requirements in DM&S.

- Verification and Development Center (VDCs)

Six medical centers will be the focal point of our software development and standardization activity. Their primary initial function will be to integrate existing functional modules and to verify, document and assist in implementing these applications

throughout the medical center network. Under the direction of MIRMIO, they will also participate in the creation of department-wide standards for systems development, verification and documentation and assist in the establishment of standard data element definitions.

- Medical Center Director

Each medical center director is given the authority to perform certain technical and managerial functions including the determination of local ADP requirements, prioritization of local ADP needs, conduct of cost effectiveness studies, planning and estimation of resources required, direction of certain limited local procurements, selection from a number of available hardware and software options, and operation of computers located within his hospital.

3. Computer Utilization at the Medical Center

One of the primary goals of the DHCP is to provide for each medical center the computer capacity to accommodate all of the following:

- Standard "CORE" Programs

The medical center must address as its initial objective the agency priority functions of Admission, Discharge, Transfer, Scheduling (ADTS), Pharmacy and Clinical Laboratory. In most cases this will mean that the station will install the CORE package. The CORE will be a functionally integrated system created from individual field station-developed modules. Initially it will include Patient Registration, ADTS and Outpatient Pharmacy. Inpatient Pharmacy and Clinical Laboratory functions will be added once their development and integration have been completed.

Some stations will be addressing priority functions in other ways; e.g. the Honeywell Patient Care System currently operational at eight VAMCs, the Enhanced Pharmacy System currently operating in Medical District #17.

- VACO Management Information

A second group of priority applications will be those required to aggregate hospital data into summaries for reporting to higher level management. Capacity must also be available for the preparation of special management reports on a recurring or ad hoc basis as required by VA Central Office.

- Local Applications of Choice

Any remaining capacity will be available to the medical center for a number of locally controlled applications.

- Special data extracts and ad hoc reports required by individual clinicians or other hospital personnel.

- Software packages obtained through the centrally maintained software inventory. This will include special-purpose programs developed by other medical centers and certified for sharing. (An example is the Psychodiagnostic Assessment program developed at the Bay Pines VAMC to administer and interpret various psychological tests and interviews.)
- Local development will be permitted with coordination among users, and VACO, and the Verification and Development Centers. VA personnel have developed a natural language application generator - the File Manager - which will facilitate this process.

Initial configurations will not allow a significant amount of discretionary capacity. In the future, however, room for local applications will increase as illustrated in Figure 2.

4. Systems Development

The decentralization concept implies systems design and maintenance techniques which differ both in scale and approach from those of highly centralized efforts. Systems development in a hospital environment has great potential for responding to user needs in an effective and timely manner. Inherent in this approach, however, are pitfalls which we must avoid to ensure system reliability and cost effectiveness.

Standardization will be introduced to enhance overall efficiency. Duplication of development efforts will be minimized through careful monitoring and the establishment of a software sharing mechanism. Systems will be supported by sufficient documentation to facilitate development, evaluation, user training and operation, and software maintenance. Before any program is put into operational use, at more than one location, it must meet established verification criteria. Local initiatives will be coordinated to meet agency priorities and objectives.

The Verification and Development Centers (VDCs), will be one of our primary software development resources. Along with the responsibility for integration, validation and maintenance of the CORE, the VDCs will be tasked by the Medical Information Resources Management Office (MIRMO) to develop additional software. Program officials in the VACO Professional and Administrative Services, as well as special interest user groups, will assist MIRMO in the assignment of development priorities.

Individual medical centers will be authorized to develop applications if established conditions are met including completion of a review of available software to ensure that no existing package can be used as is, or with modification, to meet the local need.

During the development process, regardless of where it takes place, the following agency objectives will be emphasized:

- User involvement throughout.
- A dynamic, iterative development technique in which the user and programmer work together to refine the specifications as the system evolves.
- Use of common data elements and descriptions to enhance compatibility among medical centers.
- Incorporation of DMS and agency-required data elements into systems developed for VAMC use.
- Hardware independent design whenever possible.
- Use of high-level ANSI standard languages.
- Flexible, modular programs to allow for necessary local adaptation.

5. Validation, Certification and Sharing of Software

In support of the software development aspect of the DHCP, a mechanism is being instituted to ensure that each application meets all established user and agency criteria for operational use. The intent of this process is to assure a high degree of system integrity. Its general purpose is to detect inadequacies in the programs and to pinpoint defective operating procedures. The cost of maintaining systems will be reduced by applying thorough testing and verification procedures before each system is installed. Two basic components are involved in the process, both requiring complete systems testing and a thorough review of supporting documentation.

- Validation

The validation component assesses each application from the user's point of view with particular emphasis on: clinical soundness; consistency with program standards and practices; satisfaction of stated functional requirements; incorporation of measures to ensure privacy and security of patient and other sensitive data; and timeliness of system response.

- Certification

The certification component involves an objective review from a technical and agency management perspective and results in formal approval for implementation. Results of the validation component will be reviewed along with the following: satisfaction of performance requirements; reliability; consistency with data base conventions; accuracy of computations; freedom from logic errors; adequacy of documentation; and compliance with agency policy and procedures.

(It should be noted that the level of verification required will be commensurate with the complexity and sensitivity of the application. Programs locally developed for use in one VAMC which are relatively simple in function, do not modify a shared fiscal or patient data base, and are not for export to other medical centers need not follow

the formal validation/certification process. Each medical center director will establish local procedures for validating these programs.)

Both validation and certification will, in most cases, be conducted in a Verification and Development Center (VDC). After certification, the responsible VDC will prepare a brief abstract which will be the medium for the exchange of information on all available software. Following a standard format, the document will describe the purpose and scope of a given application and provide specific information regarding its transportability. A library of submitted abstracts will be established and maintained in the Medical Information Resources Management Office (MIRMO). Current abstracts will be published and distributed to every facility on a regular basis. Copies of actual programs and supportive documentation (Functional Description, Users Guide, and Technical Description) will be maintained and distributed through a centrally located Software Repository.

6. Implementation Strategy

The Project Management Task Force (PMTF) has proposed an implementation plan for the DHCP which involves three successive phases, each building on its predecessor in terms of hardware and software proliferation (see Figure 3). The sheer size of the medical center network necessitates a gradual process in which some hospitals will receive computer support much later than others. For this reason, Phase I objectives may not be realized in many medical centers until Phase III is well underway. Nevertheless, the initiation of each phase can be associated with a specific time frame, procurement action, and set of objectives.

- Phase I

The initial implementation step, associated with a procurement action planned for FY '82, is designed to meet the following objectives:

- To demonstrate the effectiveness and transportability of selected field-developed software.
- To make efficient use of currently available hardware.
- To establish a foundation for succeeding phases, in terms of software verification and development centers, hospital personnel with ADP experience to assist with further installations, and a developmental base for enhancing the overall program.
- To meet the critical ADP needs of 30 medical centers by implementing an initial CORE system supporting ADTS and Outpatient Pharmacy functions.

(As one of the parallel tracks which DMS is pursuing, Phase I is the only portion of this implementation plan for DHCP to which we are firmly committed. Specifics of Phase I and its associated procurement action are described in subsequent sections of this document.)

- Phase II

Phase II, involving a somewhat larger procurement in FY 83, has two primary objectives:

- To meet the critical needs of 34 additional medical centers through the installation of the initial CORE system (ADTS and Outpatient Pharmacy).
- To enhance the CORE at the Phase I hospitals by adding hardware and software to support Inpatient Pharmacy and Clinical Laboratory.

- Phase III

This final phase will involve a number of procurements for several years beginning with one in FY 84 to provide support to approximately 60 additional medical centers. Overall objectives include the following:

- To meet the critical needs of the remaining medical centers.
- To extend the full CORE (ADTS, Inpatient and Outpatient Pharmacy, and Clinical Laboratory) to all wards and work stations.
- To pursue additional software development (e.g., CORE enhancement, automation of other hospital areas including indirect patient support functions, improvement of management information, and possible redesign of existing centralized DMS systems.)

PHASE I PILOT TEST

PHASE I - SELECTED MEDICAL CENTERS

A number of medical centers have in the past few years acquired various ADP resources — both hardware and personnel. Using these limited resources they have been active in developing medical applications in the field. From this group were selected the six Verification & Development Centers (VDCs), one in each of the DM&S regions. During Phase I these medical centers will be provided with additional hardware and staff to support the VDC functions which include the following:

- Develop and integrate CORE systems and provide "customizing" of these systems where necessary to accommodate unique local requirements.
- Maintain CORE software.
- Assist medical centers in implementing CORE systems.
- Develop software as assigned by the Medical Information Resources Management Office (MIRMO).
- Prepare documentation for CORE and for any other software developed at the VDC.
- Assist MIRMO in the maintenance of data dictionaries and the establishment of data and systems development standards and conventions.
- Test and review software as a part of the validation/certification process.
- Prepare abstracts of certified programs for the MIRMO software inventory.
- Monitor software development in the individual medical centers, in conjunction with MIRMO.
- Provide technical assistance to the medical centers.

The remaining medical centers in Phase I can be grouped into the following categories:

- Hospitals with Existing Resources

Eighteen medical centers have been selected based on existing hardware and staff with some ADP experience. This group will demonstrate the DHCP concept at less expense and in a shorter time than would be possible were site preparation, extensive ADP orientation and purchase of total hardware configurations necessary.

- Hospitals with No Existing Resources

Six additional facilities with no existing ADP resources were selected for the purpose of demonstrating the ease of transporting the field developed applications. Selection was based on number of beds, level of outpatient visits, geographical considerations, and workload projections through 1990.

Figure 4 identifies those individual medical centers selected in each category.

PHASE I APPLICATION SOFTWARE TO BE INSTALLED

INITIAL CORE SOFTWARE

One of the most valuable resources available in this decentralization effort is the software developed by field personnel in the hospital setting. These programs not only address user needs, as demonstrated in individual medical centers, but also are written in the same ANSI standard programming language. Most of the applications have already been developed or adapted to follow a uniform data element terminology and code system and to conform to a consistent set of design conventions. This facilitates their integration into larger system configurations without significant reprogramming. They have been operational for varying periods of time and have satisfied both clinicians and hospital administrators.

For the Phase I implementation a limited number of these applications are currently being integrated, tested, and reviewed by the Office of Data Management (ODM&T) Systems Audit Staff. Selected applications which address the priority hospital functions will form the initial CORE. They are briefly described as follows:

- Registration

This application will register the patient once during his treatment course and make the demographic information available throughout the VANC.

- Admission/Discharge/Transfer

This is basically a tracking system which maintains information about the location of inpatients. Its functions include generation of the Gains and Losses document and provision of lists of medical center patients, ward rosters and bed census reports.

- Central Scheduling

Functions of this application include: scheduling of both inpatients and outpatients for clinic appointments; keeping track of all appointments for a given patient to eliminate duplication of appointments, travel and meals; generating file room pull data; identifying no shows; and sending preappointment and cancel clinic letters.

- Outpatient Pharmacy

This application will generate outpatient labels for the pharmacy, provide control of the drug data for the medical center, maintain patient medication profiles, provide drug inventory control and produce related management information for the medical center director.

The Phase I CORE provides two different functional levels for maximum local flexibility. Two versions of each software package exist. The versions can be considered "basic" and "optimal" applications in terms of the options each offers. For example, in the "optimal" registration package the computer generates a letter to the Department of Veterans Benefits (DVB) for determination of patient eligibility. The "basic" version requires eligibility search by the current manual method. Both systems, however, maintain total registration, including all the information on the VA Form 10-10, and allow searches by any data field on this form.

These choices are provided to the medical centers because some of the current equipment being upgraded will not accommodate both "optimal" functional packages. This is particularly true if only a PDP 11/34 or equivalent is involved. Further, at some smaller hospitals, all options are not essential.

The "optimal" Registration, ADT and Scheduling programs were developed at Oklahoma City. San Francisco developed an integrated Registration, ADT and Scheduling package which provides the "basic" functional level. There are also two outpatient pharmacy systems being made available to the medical centers—the "optimal" package developed in Salt Lake City and the "basic" from Washington, D.C.

Inpatient Pharmacy, Clinical Laboratory and other clinical and administrative applications will be added during successive phases of the DHCP implementation.

Before the end of the fiscal year, two initial software demonstrations will be performed and evaluated. This process will further assure the transportability and suitability of all of the CORE packages for installation at the remaining Phase I medical centers. Albany VAMC will demonstrate the Oklahoma City MAS programs and the Salt Lake City pharmacy utilizing a PDP 11/70 to be shipped from the Hines CSC and a small quantity of terminals to be transferred from other locations. Fort Howard VAMC will demonstrate the "basic" systems - MAS from San Francisco and pharmacy from Washington.

Figure 5 and 6 identify the Initial CORE Software development sites, the development tasks and projected completion dates, and an implementation schedule which includes Preliminary Activities and Phase I hospital implementations.

FUNCTIONAL DESCRIPTION - MEDICAL ADMINISTRATION

Representative of the software to be installed is the Medical Administration package explained in detail in the Functional Description contained in the Appendix (See TAB APP). This package was developed at the Oklahoma City Medical Center and is in the final stage of audit review. Certification is expected before the end of June. The Functional Description explains fully the system's objectives, functions, and operating environment. It also contains examples of system output.

PHASE I HARDWARE AND SYSTEMS SOFTWARE TO BE PROCURED

The equipment and systems software required to support the Phase I implementation will come from three sources:

- Twenty-four of the the 30 Phase I medical centers already have some degree of hardware and systems software.
- A number of configured minicomputer systems are available for transfer from the VA's Computer Support Center at Hines, Illinois, to the medical centers (See Figure 7). There will also be some shifting of peripheral equipment among the medical centers to improve the overall effectiveness of available hardware.
- A procurement of approximately \$5 million is planned for the acquisition of hardware and systems software. The necessary RFP(s) will be released during the fourth quarter (FY82). Because this procurement involves an upgrade to existing hardware and installation of existing agency-owned software, all equipment and systems software will be acquired on a brand name or equal basis.

On the following pages, three special purpose lists describe hardware and system software involved in Phase I:

- "Equipment and Applications by VAMC"
This list reflects a number of different kinds of information. For each medical center, current equipment to be upgraded is identified along with the desired configuration after upgrading significant applications are listed. Items to be shipped to or from other locations are listed followed by equipment and systems software to be purchased.
- "Consolidated Purchase List"
The "Consolidated Purchase List" identifies total quantity and cost for each item to be purchased.
- "Equipment Distribution List"
For each item, a list of receiving hospitals is given.

EQUIPMENT AND APPLICATIONS BY VMC

VMC ALBANY, NY

CURRENT COMPUTER SYSTEM TO BE UPGRADED:EQUIPMENT TO BE PURCHASED FOR UPGRADE:

DEC POP 11/74

Item	Cost
1 CRT/Printer lot (Appendix B)	\$ 37,000
2 DE 11E	7,000
2 Triple Modem	2,000
5 Bar Code Readers	15,000
1 Bar Code Generator	4,000
1 DE 11F	3,500
1 TIE 16-BA MAG Tape Drive and Cab	21,250
2 DF03-AC Modem	2,000
4 RP06-Disk Packs	5,600
TOTAL	\$ 97,350

SOFTWARE TO BE PURCHASED FOR UPGRADE:

1 HMPS Operating Systems License	\$ 9,000
1 Multisort License	4,500
2 DDB Software	8,000
TOTAL	21,500

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

NONE

NEW COMPUTER SYSTEM TO BE PURCHASED:

NONE

Hardware Configuration:

N/A

Software Licenses:

N/A

WMC ALBANY, NY (CONTINUED)VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):

DEC POP 11/70 (01)
(From Hines CSC)

ItemHardware Configuration:

640 K Memory
1 1406 Line Printer
2 R003 Disk Drives (67 MB each)
2 R006 Disk Drives (176 MB each)
2 TE16 Tape Drives
6 VT 100 Terminals

Software Licenses:

RSX-11M+ V1.0
PMS RSX V1.0
DECNET
SXT-11 V2.0
DATEVIEW-11 V2.0

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM): NONE

VMC BAY PTES, FLCURRENT COMPUTER SYSTEM TO BE UPGRADED:

DEC POP 11/34

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

Item	Cost
1 RM02-AA Disk Drive	\$ 29,300
1 RM02-AA Disk Drive	19,300
4 RM02 Spare Cartridges	2,400
1 CR 11-BC Card Reader	11,700
1 CRT/Printer Lot (Appendix B)	37,000
1 Bar Code Generator	4,000
5 Bar Code Readers	15,000
2 TIC Carrier Multiplexer	6,800
TOTAL	\$125,500

SOFTWARE TO BE PURCHASED FOR UPGRADE:

1 ISM Multivard License	\$ 5,000
1 OE 100-AA FORTRAN License	7,128
1 DDB Software	4,000
TOTAL	\$16,128

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

NONE

VWC BAY PINES, FL (CONTINUED)NEW COMPUTER SYSTEM TO BE PURCHASED:

DEC VAX 11/780

Hardware Configuration:

<u>Item</u>	<u>Cost</u>
1 VAX Basic Config. SV-AXISC-CA	\$274,900
1 H7112A Battery Backup	1,250
1 BA11-RE Expansion Box	3,400
1 DE-11B Multiplier	1,743
5 DE-11E Multiplier	17,500
1 DD 11-CK Back Plane	450
3 DD 11-CK Back Plane	2,700
1 11 9602 DF Cabinet	3,360
2 DFR 11-AC Remote Interface	8,400
1 R405-AC Disk Drive	34,000
1 R405-BC Disk Drive	39,140
5 R405-P Spare Disk Pack	7,800
1 DB 11-A Unibus Repeater	2,035
1 LP 11 CA Printer	27,800
2 DF03-CA Modem	2,600
<u>TOTAL</u>	<u>\$427,078</u>

Software Licenses:

<u>Item</u>	<u>Cost</u>
1 DB Software	\$ 4,000
1 DSN MOPS Operating System	19,500
<u>TOTAL</u>	<u>\$ 23,500</u>

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):

<u>Item</u>	<u>Cost</u>
NONE	
<u>TOTAL</u>	<u>N/A</u>

Hardware Configuration:VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM): NONE

WMC BIRMINGHAM, AL

DEC FOR 11/70

CURRENT COMPUTER SYSTEM TO BE UPGRADED:

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

<u>Item</u>	<u>Cost</u>
3 Bar Code Readers	\$ 9,000
1 Lot CRT/Printer (Appendix A)	24,000
TOTAL	\$33,000

SOFTWARE TO BE PURCHASED FOR UPGRADE:

NONE

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

NONE

NEW COMPUTER SYSTEM TO BE PURCHASED:

NONE

Hardware Configuration:

<u>Item</u>	<u>Cost</u>
N/A	\$

Software Licenses:

N/A

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):

NONE

Hardware Configuration:

<u>Item</u>	<u>Cost</u>
N/A	

Software Licenses:

N/A

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM):

NONE

VANC ENCL 11

CURRENT COMPUTER SYSTEM TO BE UPGRADED:

DEC POP 11/44

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

<u>Item</u>	<u>Cost</u>
1 DELL Multiplexer	\$ 3,500
1 Triple Modem (Answer/Send)	1,000
1 CRT/Printer Lck (Appendix B)	37,000
1 FP Processor (FP 11A)	3,400
1 Cache Memory (KK11A)	4,000
1 TC131 Kennedy Tape Drive	10,000
With Cabinet	
TOTAL	\$ 58,500

SOFTWARE TO BE PURCHASED FOR UPGRADE:

1 MUMPS Operating System License	\$ 9,000
1 Multivord License	4,500
TOTAL	\$ 13,500

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

NONE

NEW COMPUTER SYSTEM TO BE PURCHASED:

NONE

Hardware Configuration:Software Licenses:

<u>Item</u>	<u>Cost</u>
N/A	
N/A	

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):

NONE

Hardware Configuration:

<u>Item</u>
N/A

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM):

NONE

CURRENT COMPUTER SYSTEM TO BE UPGRADED:

DEC FOP 11/60

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

<u>Item</u>	<u>Cost</u>
1 Triple Modem (Rosal VADIC Answer/ Send)	\$ 1,000
1 CRT/Printer Lot (Appendix B)	37,000
2 DE 11C Multiplexers	7,000
6 Spare Disk Cartridges (RM02)	3,600
1 RM02-NA Disk Drive & Controller	29,300
1 RM02-NA Disk Drive	19,300
1 128 KB MOS MEMORY	6,000
TOTAL:	\$103,200

SOFTWARE TO BE PURCHASED FOR UPGRADE:

<u>Item</u>	<u>Cost</u>
1 MUMPS Operating System License	\$ 9,000
1 Multitexed (License)	4,500
TOTAL:	\$ 13,500

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

None

NEW COMPUTER SYSTEM TO BE PURCHASED:

None

Hardware Configuration:

None

Software Licenses:

N/A

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):

None

Hardware Configuration:

None

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM):

None

UNIC DALLAS, TXCURRENT COMPUTER SYSTEM TO BE UPGRADED:

01: DEC POP 11/34

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

<u>Item</u>	<u>Cost</u>
1 DE 11E Multiplexer	\$ 3,500
1 R402-AA Disk Drive with Controller	29,300
1 R402-AA Disk Drive	19,300
TOTAL	\$52,100

SOFTWARE TO BE PURCHASED FOR UPGRADE:

(DEC POP 11/34)

<u>Item</u>	<u>Cost</u>
1 MUMPS OS License	\$ 9,000
1 Multitwood License	4,500
TOTAL	\$13,500

CURRENT COMPUTER SYSTEM TO BE UPGRADED:

02: DEC POP 11/44

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

(DEC POP 11/44)

<u>Item</u>	<u>Cost</u>
1 Ctr/Printer Lot (Appendix B)	\$37,000
2 DE 11P Multiplexers	7,000
1 R402-AA Disk Drive	19,300
1 256K MOS Memory WE11-LD	2,800
TOTAL	\$66,100

SOFTWARE TO BE PURCHASED FOR UPGRADE:

(DEC POP 11/44)

None

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

None

WMC DALLAS, TX (CONTINUED)

NEW COMPUTER SYSTEM TO BE PURCHASED:

None	Item	Cost
N/A	N/A	\$
N/A	N/A	

Hardware Configuration:

Software Licenses:

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):

None	Item
N/A	N/A

Hardware Configuration:

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM):

None

VANC FORT HOWARD, MD

DDC POP 11/24

CURRENT COMPUTER SYSTEM TO BE UPGRADED:EQUIPMENT TO BE PURCHASED FOR UPGRADE:

Item	Cost
1 256K MS111D Memory	\$ 2,800
2 Modem DP 03-PC	2,600
1 135 MB Winchester, Plus 65 MP Removable, Plus Controller Disk Drive	20,000
4 Disk Cartridges (65 Removable)	2,000
2 300/1200 Baud Acoustic Modems	1,000
1 INTEL VADIC Triple Band/Recessive Modem	1,000
1 CRT/Printer Lot (Appendix A)	24,000
2 Bar Code Readers	6,000
1 Bar Code Generator	4,000
1 Battery Backup	1,600
1 128K MMS Memory	6,000
1 Cabinet	1,500
1 KT24 Address Unit	4,000
TOTAL	\$76,500

SOFTWARE TO BE PURCHASED FOR UPGRADE:

None

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

None

NEW COMPUTER SYSTEM TO BE PURCHASED:

None

Hardware Configuration:

Item

Software Licenses:

N/A

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):

None

Hardware Configuration:

Item

N/A

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM):

None

Cost
\$

WMC FRESNO, CA

DOC FOR 11/34

CURRENT COMPUTER SYSTEM TO BE UPGRADED:

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

Item	Cost
1 CRT/Printer Lot (Appendix A)	\$24,000
1 Cache Memory (KX11A)	4,000
1 Winchester Drive Etc	20,000
1 Triple Modem	1,000
TOTAL	\$49,000

SOFTWARE TO BE PURCHASED FOR UPGRADE:

None

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

None

NEW COMPUTER SYSTEM TO BE PURCHASED:

None

Hardware Configuration:

N/A

Software Licenses:

N/A

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):

None

Hardware Configuration:

N/A

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM):

None

VMC HINES JL
(NOTE: ALSO a VLD Center)

CURRENT COMPUTER SYSTEM TO BE UPGRADED:

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

SOFTWARE TO BE PURCHASED FOR UPGRADE:

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

NEW COMPUTER SYSTEM TO BE PURCHASED:

Cost

Hardware Configuration:

Software Licenses:

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM): #1:

Data General MV-8000
(From Hines CSC)

Item

Hardware Configuration

As Configured

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM): #2:

DEC POP 11/34
(From Hines CSC)

Item

Hardware Configuration

As Configured

VMC HINES, IL (ATTNED)EQUIPMENT TO BE PURCHASED FOR TRANSFERRED SYSTEM:

Item	DEC POP 11/34	Cost
1 Out/Printer Lot (Appendix B)		\$17,000
1 Triple Modem		1,000
1 DE 11E		3,500
TOTAL		<u>\$21,500</u>

SOFTWARE TO BE PURCHASED FOR TRANSFERRED SYSTEM: #1:

Item	DEC POP 11/34	Cost
1 HUPS Operating License		\$ 9,000
1 Multisword License		4,500
TOTAL		<u>\$13,500</u>

SOFTWARE TO BE PURCHASED FOR TRANSFERRED SYSTEM: #2:

Data General MV-8000

Item	Cost
5 Hups Operating Systems	\$75,000
TOTAL	<u>\$75,000</u>

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM): NONE

VWAC LEXINGTON, KYCURRENT COMPUTER SYSTEM TO BE UPGRADED:

None

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

None

SOFTWARE TO BE PURCHASED FOR UPGRADE:

None

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

None

NEW COMPUTER SYSTEM TO BE PURCHASED:

DEC POP 11/70

Item	Cost
*1 CPU 11/70	\$90,000
1 CRT/Printer Lot (Appendix B)	37,000
2 Multiplexer DS 11C	7,000
1 256K MOS Memory HS11-4C	8,900
TOTAL	\$142,900

Hardware Configuration:

*The actual computer configuration required will be determined prior to release of the RFP (11/70 or VWX 750).

Software Licenses:

Item	Cost
1 MUPES Operating System	\$ 9,000
TOTAL	\$ 9,000

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):

None

Hardware Configuration:

Item
N/A

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM):

None

VMC LIVERMONT, CA

CURRENT COMPUTER SYSTEM TO BE UPGRADED:

DEC POP 11/34

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

Item	Cost
1 Triple Modem (INCOL VMDIC Answer/Send)	\$ 1,000
1 Cache Memory RK-11A	4,000
1 135 MB Winchester, Plus 65 (B) Removable plus Controller Disk Drive	20,000
1 CGO/Printer Lot (Appendix A)	24,000
1 OS 11C Multiplexer	3,500
1 256k 1611-LD Memory	2,800
TOTAL	\$55,300

SOFTWARE TO BE PURCHASED FOR UPGRADE:

NONE

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

NONE

NEW COMPUTER SYSTEM TO BE PURCHASED:

NONE

Hardware Configuration:

Software Licenses:

Cost

N/A

N/A

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):

NONE

Hardware Configuration:

N/A

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM):

NONE

WAC LOMA - A, CACURRENT COMPUTER SYSTEM TO BE UPGRADED:

DEC PDP 11/34

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

<u>Item</u>	<u>Cost</u>
1 Tape Drive 800/1600	\$10,000
1 Ckt/Printer Lot (Appendix B)	37,000
1 256K MOS Memory MS11-LD	2,900
1 Triple Modem (RNCAL VADIC Answer/Send)	1,000
2 DS 11E Multiplexers	7,000
1 Cache Memory KX11-A	4,000
1 Expansion Cabinet	3,060
1 135 MB Winchester, Plus 65 MB Removable, Plus Controller Disk Drive	20,000
TOTAL	\$84,860

SOFTWARE TO BE PURCHASED FOR UPGRADE:

<u>Item</u>	<u>Cost</u>
1 Multitword License	\$ 4,500
TOTAL	\$ 4,500

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:NEW COMPUTER SYSTEM TO BE PURCHASED:Hardware Configuration:Software Licenses:Cost

NONE

NONE

Item

N/A

N/A

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):Hardware Configuration

NONE

Item

N/A

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM):

NONE

CURRENT COMPUTER SYSTEM TO BE UPGRADED:

DEC POP 11/70

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

<u>Item</u>	<u>Cost</u>
1 Triple Module (RSCAL VADIC Answer/Send)	\$ 1,000
1 Ctr/Printer Lot (Appendix B)	37,000
1 Embosser Interface (ASC II Addressograph 6000 Interface)	6,000
2 DE 11E Multiplexer	7,000
1 760K MOS Memory (MS 11-40)	12,000
TOTAL	\$63,000

SOFTWARE TO BE PURCHASED FOR UPGRADE:

<u>Item</u>	<u>Cost</u>
1 Multitword License	\$4,500
TOTAL	\$4,500

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

NONE

NEW COMPUTER SYSTEM TO BE PURCHASED:

NONE

Hardware Configuration:

N/A

Software Licenses:

N/A

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):

NONE

Hardware Configuration

N/A

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM):

NONE

VMC MONTH INCURRENT COMPUTER SYSTEM TO BE UPGRADED:

NONE

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

NONE

SOFTWARE TO BE PURCHASED FOR UPGRADE:

NONE

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

NONE

NEW COMPUTER SYSTEM TO BE PURCHASED:

NONE

ItemHardware Configuration:

N/A

Software Licenses:

N/A

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):DOC POP 11/70 (44)
(From Hires CSC)ItemHardware Configuration:

As Configured

EQUIPMENT TO BE PURCHASED FOR TRANSFERRED SYSTEM:

DOC POP 11/70 (44)

Cost

1 CSD/Printer Lot (Appendix B)	\$37,000
1 Triple Modem	1,000
2 DE 11E Multiplexers	7,000
TOTAL	\$45,000

Item

1 CSD/Printer Lot (Appendix B)	
1 Triple Modem	
2 DE 11E Multiplexers	
TOTAL	

SOFTWARE TO BE PURCHASED FOR TRANSFERRED SYSTEM:

DOC POP 11/70 (44)

Cost	
1 RMS Operating Systems License	\$ 9,000
1 Multitword License	4,500
TOTAL	\$13,500

Item

1 RMS Operating Systems License	
1 Multitword License	
TOTAL	

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM):

NONE

VANC NEW YORK, NY

CURRENT COMPUTER SYSTEM TO BE UPGRADED:

NONE

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

NONE

SOFTWARE TO BE PURCHASED FOR UPGRADE:

NONE

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

NONE

NEW COMPUTER SYSTEM TO BE PURCHASED:

DEC PDP 11/70

Hardware Configuration:

Item

Cost

4 Multiplexers DELLIE	\$ 14,000
1 Triple Modem (RACAL VADIC)	1,000
4 Spare Disk Cartridges (RM03)	2,000
1 CRT/Printer Lot (Appendix B)	37,000
*1 CPU 11/70	90,000
1 RM03-AA Disk and Controller	30,000
1 RM03-AA Disk Drive	20,000
1 TE16 Tape Controller	7,500
TOTAL	\$202,100

*The actual computer configuration required will be determined prior to release of the RFP. (11/70 or Vax 750)

Software Licenses:

Item

Cost

1 MITS Operating System License	\$9,000
1 Multitimed license	4,500
1 DSH V2.1 Upgrade	\$ 1,200
TOTAL	\$14,700

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):

NONE

Hardware Configuration

Item

N/A

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM):

NONE

VMC OKLAHOMA CITY, OKCURRENT COMPUTER SYSTEM TO BE UPGRADED:

DEC POP 11/70

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

<u>Item</u>	<u>Cost</u>
PURCHASE CONTROLLER FOR RING FROM DEC CONSISTING OF:	
1 RI 11-48 MASSBUS	\$12,000
1 Bulkhead	36
1 MASSBUS Cable	1,040
Ribbon Cables	192
Terminator	259
1 Panel	74
TOTAL FOR CONVERTER KIT (AP06)	\$13,601

SOFTWARE TO BE PURCHASED FOR UPGRADE:

NCR/E

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

(From VMC Salt Lake City, UT)

NEW COMPUTER SYSTEM TO BE PURCHASED:

DEC POP 11/70

<u>Item</u>	<u>Cost</u>
Hardware Configuration:	
*1 POP 11/70/CPU	\$ 90,000
1 CRT/Printer Lot (Appendix B)	37,000
5 User Code Readers	18,000
3 Multiplexers DE 11P	14,500
	\$159,500

*The actual computer configuration required will be determined prior to release of the RFP. (11/70 or VAX 750)

Software Licenses:

1 MMS Operating System	\$ 9,000
TOTAL	\$ 9,000

WMC OKLAHOMA CITY, OK (CONTINUED)VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):

NONE

Hardware ConfigurationItem

N/A

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM):

NONE

WMC PAID A.O. CA.

CURRENT COMPUTER SYSTEM TO BE UPGRADED:

NONE

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

NONE

SOFTWARE TO BE PURCHASED FOR UPGRADE:

NONE

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

NONE

NEW COMPUTER SYSTEM TO BE PURCHASED:

DEC POP 11/70

<u>Item</u>	<u>Cost</u>
1 CRT/Printer Lot (Appendix B)	\$37,000
4 DE 11E Multiplier	15,000
1 TE 16 Controller	7,500
2 Seat Multiplier	11,000
*1 POP 11/70 CPU	90,000
1 Triple Modem	1,000
1 Cache Memory NK11-A	4,000
<u>TOTAL</u>	<u>\$165,500</u>

*The actual computer configuration required will be determined prior to the release of the RFP. (11/70 or VAX 750)

Software Licenses:

<u>Item</u>	<u>Cost</u>
1 MUMPS Operating System	\$ 9,000
<u>TOTAL</u>	<u>\$ 9,000</u>

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):

NONE

Hardware Configuration

N/A

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM):

NONE

VANC PERCY WT, MD

CURRENT COMPUTER SYSTEM TO BE UPGRADED:

***** TO MS. PURCHASE FOR UPGRADE:

... TO A FULLY USED FOR UPGRADES:

VA-OWNED EQUIPMENT.) BE TRANSFERRED FOR UPGRADE:

NEW COMPUTER SYSTEMS TO BE PURCHASED:

Cost	

59

Hardware Configuration:

Software Required:

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):

Icon

Hardware Configuration:

POP 11/70 (\$2)
1 CPU (3 cabinets)
576K Memory
1 LQ6 Line Printer
2 RM3 Nsk Drives (67 Megabytes)
2 RM6 Disk Drives (167 Megabytes)
3 TE16 Tape Drives
6 VT100 Terminals

<u>Cost</u>	
\$ 1,000	
7,000	
9,000	
4,000	
<u>37,000</u>	
\$ 38,000	

1 Triple Modem (Answer/Send)
2 DE 11E
3 Bar Code Readers
1 Bar Code Generator
1 CRT/Printer Lot (Appendix B)
total.

SOFTWARE TO BE PURCHASED FOR TRANSFERRED SYSTEM:

<u>Cont</u>	
\$ 9,000	
4,500	
<u>\$13,500</u>	

<u>Item</u>	
1 MUGS Operating System License	
1 Multitword License	
TOTAL	

VANC PITTSBURGH, PACURRENT COMPUTER SYSTEM TO BE UPGRADED:EQUIPMENT TO BE PURCHASED FOR UPGRADE:

Cost
\$ 6,000
\$ 6,000
Cost

DEC PDP 11/45

Item
1 256 Memory

Item
1 MUPPS Operating System License
TOTAL

Cost
\$ 9,000
\$ 9,000

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:NEW COMPUTER SYSTEM TO BE PURCHASED:

Cost

NONE

NONE

Item

N/A

N/A

Hardware Configuration:Software Licenses:VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):DEC PDP 11/70 (#3)
(From Hines CSC)

Item

Hardware Configuration:

PDP 11/70 (#3) as configured:

CPU

256K Memory

1 LP06 Line Printer

2 RK03 Disk Drives

2 TEL6 Tape Drives

1 LA-36CE Hard Copy Terminal

2 DE 11C

2 DE 11D

1 Spare Disk Cartridge

EQUIPMENT TO BE PURCHASED FOR TRANSFERRED SYSTEM:

DEC PDP 11/70 (#3)

VWC PITTSBURGH, PA (CONTINUED)EQUIPMENT TO BE PURCHASED FOR TRANSFERRED SYSTEM:

DEC POP 11/70 (13)

<u>Item</u>	<u>Cost</u>
1 RM02-AA Disk Drive and Controller	\$29,300
1 RM02-AA Disk Drive	19,300
1 CRT/Printer Lot (Appendix B)	37,000
1 Triple Modem (Auto Answer/Send)	1,000
TOTAL	\$86,600

SOFTWARE TO BE PURCHASED FOR TRANSFERRED SYSTEM:

<u>Item</u>	<u>Cost</u>
1 MMPS Operating System	\$ 9,000
1 Multitword License	4,500
TOTAL	\$13,500

VA-OWNED MISCELLANEOUS EQUIPMENT TO TRANSFERRED (FROM):

NONE

VANC BELLO, WV

CURRENT COMPUTER SYSTEM TO BE UPGRADED:

DEC PDP 11/34

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

Item	Cost
1 CG/Printer Lot (Appendix B)	\$37,000
1 256K MOS Memory NS11-LD	2,800
1 Cache Memory NK11-A	4,000
1 RK07-EA Disk Drive	10,000
1 RK711-EA Drive and Controller	15,000
TOTAL	\$67,600

SOFTWARE TO BE PURCHASED FOR UPGRADE:

NONE

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

NONE

NEW COMPUTER SYSTEM TO BE PURCHASED:

NONE

Hardware Configuration:

Cost

Software Licenses:

Item

N/A

N/A

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FURN):

NONE

Hardware Configuration

Item

N/A

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FURN):

NONE

WMC BALT LAB. ETT, UTCURRENT COMPUTER SYSTEM TO BE UPGRADED:

DEC POP 11/70

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

NONE

SOFTWARE TO BE PURCHASED FOR UPGRADE:

(DEC POP 11/70)

Item	Cost
1 MUMPS DB Software	\$ 4,000
TOTAL	\$ 4,000

VA-CMED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE: (From WMC Oklahoma City, OK)

Item
1 RP06 Disk Drive
1 RP06 Spare Pack

NEW COMPUTER SYSTEM TO BE PURCHASED:Hardware Configuration

Item	Cost
1 CMT/Printer Lot (Appendix B)	\$37,000
*1 11/70 CPU	90,000
6 Bar Code Readers	18,000
1 Bar Code Generator	4,000
1 TE26 Tape Controller	7,500
1 IE-118 Multiplexer	3,500
TOTAL	\$160,000

*The actual computer configuration required will be determined prior to release of the RFP. (11/70 or VAX 750)

Software Licenses:

Item	Cost
1 MUMPS DB Software	\$ 4,000
1 MUMPS Operating System License	9,000
TOTAL	\$13,000

VAD CENTER SAN FRANCISCO, CA (FEDERAL DISTRICT #27)

CURRENT COMPUTER SYSTEM TO BE UPGRADED:

DEC POP 11/24

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

Item	Cost
1 256K Memory M11-LD	\$ 2,800
1 Cache Memory M11-A	4,000
4 Triple Modules (Auto Answer/Send	4,000
1 Tape Drive (800/1600 BPI)	10,000
2 M102-MK Disk Drives with Cabinet	8,600
	<u>\$29,400</u>

SOFTWARE TO BE PURCHASED FOR UPGRADE:

NONE

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

NONE

NEW COMPUTER SYSTEM TO BE PURCHASED:

NONE

Hardware Configuration:

Cost

Item

N/A

Software Licenses:

N/A

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):

NONE

Hardware Configuration:

Item

N/A

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM):

NONE

VWC SAN FRANCISCO, CA

CURRENT COMPUTER SYSTEM TO BE UPGRADED:EQUIPMENT TO BE PURCHASED FOR UPGRADE:

DEC POP 11/70

Item	Cost
1 CRT/Printer Lot (Appendix B)	\$37,000
1 DE 11E Multiplexer	4,300
1 DE 11P Multiplexer	4,675
4 Triple Modem (Auto Answer/Send)	4,000
1 Baboaset (ASCII Addressograph 600 Interface)	6,000
1 Bar Code Generator	4,000
4 Bar Code Readers	12,000
TOTAL	\$71,975

SOFTWARE TO BE PURCHASED FOR UPGRADE:VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:NEW COMPUTER SYSTEM TO BE PURCHASED:

DEC VAX 11/780

Item	Cost
1 VAX Basic Configuration SV-MODEC-CA	\$233,665
1 H5780-DD Memory	18,360
1 H7112A Battery Backup	1,530
1 H905-AC Disk Drive	28,900
2 B411-02 Expansion Box	5,780
1 DE-11B Multiplexer	1,743
1 DE-11P Multiplexer 209A	4,000
2 DE-11E Multiplexer	7,000
1 DD 11-CK Back Plane	385
1 DD 11-CK Back Plane	765
1 H9602 DF Cabinet	3,060
5 H905-P Spare Disk Packs	7,875
2 L2411-07 Printers	22,500

VMC SAN FRANCISCO, CA (CONTINUED)

<u>Item</u>	<u>Cost</u>
5 IBM-PC Spare Disk Packs (Error Free)	\$7,875
1 Versatech V80C Versaplot, Interface and Stand	14,675
2 Statistical Multiplexers	11,000
1 CRT/Printer Lot (Appendix A)	24,000
4 EPJ3-AC Modem	5,200
<u>TOTAL</u>	<u>\$198,313</u>

Software Licenses:

<u>Item</u>	<u>Cost</u>
1 IBM VAX MPUS Operating System License	\$19,500
1 IBM Multisort License	4,500
1 GE-100-AY FORTRAN Installed	7,128
1 GE-095-AY BASIC Installed	8,100
<u>TOTAL</u>	<u>\$39,228</u>

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):

<u>Hardware Configuration</u>	<u>Item</u>
	N/A

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM/TO): FROM: VMC San Francisco, CA

TO: VMC Palo Alto, CA

Item

DEC FOR 11/70 UPGRADE

WMC Tucson, AZCURRENT COMPUTER SYSTEM TO BE UPGRADED:EQUIPMENT TO BE PURCHASED FOR UPGRADE:

DEC POP 11/70

<u>Item</u>	<u>Cost</u>
1 Ctr/Printer lot (Appendix B)	\$37,000
1 Triple Modem (Auto Answer/Send)	1,000
TOTAL	\$38,000

SOFTWARE TO BE PURCHASED FOR UPGRADE:

<u>Item</u>	<u>Cost</u>
1 MUMPS Operating License	\$ 9,000
1 Multitwood License	4,500
TOTAL	\$13,500

VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:NEW COMPUTER SYSTEM TO BE PURCHASED:

<u>Cost</u>
\$

Hardware Configuration:Software Licenses:VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):Hardware configuration:VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM):

VPMC WASHINGTON, DC
(NOTE: VMD Center)

CURRENT COMPUTER SYSTEM TO BE UPGRADED:

EQUIPMENT TO BE PURCHASED FOR UPGRADE:

DEC POP 11/34

Item	Cost
1 CRT/terminal Lot (Appendix B)	\$37,000
2 DE 11E Multiplier	7,000
6 Spare Disk Cartridges (NP06)	8,400
5 Bar Code Readers	15,000
1 Bar Code Generator	4,000
1 Triple Modem	1,000
TOTAL	\$75,400

SOFTWARE TO BE PURCHASED FOR UPGRADE:

VA-CRSED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:

NEW COMPUTER SYSTEM TO BE PURCHASED:

DEC VAX 11/780

Item	Cost
------	------

Hardware Configuration:

1 VAX Basic Configuration SV-

ANDEC-CA	\$233,665
1 RS780-DD Memory	18,360
1 H7112A Battery Backup	1,530
1 RM05-AC Disk Drive	28,900
2 RM11-EE Expansion Box	5,780
1 DE-11B Multiplier	1,743
4 DE-11E Multiplier	14,000
1 DD 11-CK Back Plane	385
1 DD 11-CK Back Plane	765
1 H9602 IF Cabinet	3,060
8 RM05-VX Spare Disk Packs (Error Free)	15,200
1 Versatech VMD Versaplot, Interface and Stand	14,675

VMS: WASHINGTON, 1 (CONTINUED)

Item	Cost
2 LP11-D High Speed Printers	59,400
1 DP11-AC Network Link DCOMP	
Micro-processor and Line Unit	
Modules for Local Support	3,570
2 EC03n-NO 100 Ft Coaxial Cable	238
2 Statistical Multiplexers	11,000
1 CPE/Printer Lot (Appendix A)	24,000
4 DP03-AC Modem	5,200
TOTAL	\$439,471

Software Licenses:

Item	Cost
1 OS-100-AY FORTRAN Installed	\$ 7,128
1 OS-095-AY BASIC Installed	8,100
1 Distributed Data Base Software	
with DMR 11 Interface	4,000
1 IBM Multitext License	4,500
1 MUMPS Operating System	19,500
TOTAL	\$43,228

NEW COMPUTER SYSTEM TO BE PURCHASED: 42:

Item	Cost
DEC PDP 11/44	
*PURCHASE PDP 11/44 CPU	\$85,000
TOTAL	\$85,000

Hardware configuration:

*The actual computer Configuration required will be determined prior to release of the RFP. (11/44 or VAX 750)

Software Licenses:

Item	Cost
1 MUMPS Operating System	\$ 9,000
TOTAL	\$ 9,000

VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):Hardware configuration:

Item	Cost
1 MUMPS Operating System	\$ 9,000
TOTAL	\$ 9,000

VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM):

Item	Cost
N/A	NONE

VWC'S

BUFFALO, NY
 EAST ORANGE, NJ
 DECATUR, GA
 NEW HAVEN, CT
 OMAHA, NE
 PORTLAND, OR

Region 1
 Region 2
 Region 3
 Region 4
 Region 5
 Region 6

CURRENT COMPUTER SYSTEM TO BE UPGRADED:EQUIPMENT TO BE PURCHASED FOR UPGRADE:SOFTWARE TO BE PURCHASED FOR UPGRADE:VA-OWNED EQUIPMENT TO BE TRANSFERRED FOR UPGRADE:NEW COMPUTER SYSTEM TO BE PURCHASED:

These VWC'S currently have no computers.

N/A

N/A

N/A

(Same configuration for each of 6 VWC'S)

<u>Item</u>	<u>Cost</u>
*1 PDP 11/44 CA consisting of:	
256KB Memory	\$ 31,800
1 Disk Drive with Controller RH02	
TU 58 Tape Cartridge	
8KB Parity Cache Memory	
Memory Management with Physical Address Extension	
Bootstrap module with diagnostics	
Line frequency clock	
Cabinetry:	
1 H9642 CPU Cabinet	32,300
1 Disk Drive RH02-AA	19,300
1 Disk Drive RH02 with Cabinet	7,000
2 DE 11E 32 Ports	
1 Kennedy Tape Drive 800/1600 bpi and Controller (10.5 inch reel) or equal with Cabinet	
1 BA 110M Expansion Box	18,000
1 Back Plane ID 110K	3,400
1 dc 0.3m null modem cable	940
1 Expansion cabinet H9642	70
End panels	1,430
	165

VANC'S (CONTINUED)

<u>Item</u>	<u>Cost</u>
3 RM02-PX Disk Packs	1,995
1 Triple Modem	1,000
1 COT/Printer Lot (Appendix B)	37,000
<u>TOTAL</u>	<u>\$146,000</u>

<u>Item</u>	<u>Cost</u>
1 MUPS Operating System License	\$ 9,000
1 Multitword Licence	4,500
<u>TOTAL</u>	<u>\$ 13,500</u>

Software Licenses:VA-OWNED COMPUTER SYSTEM TO BE TRANSFERRED (FROM):Hardware Configuration:VA-OWNED MISCELLANEOUS EQUIPMENT TO BE TRANSFERRED (FROM):NOTE: Total costs (6 sites):

Hardware @ \$143,700	\$862,200
Software @ \$13,500	81,000
<u>TOTAL</u>	<u>\$943,200</u>

APPENDIX A

CRT/PRINTER LOT CONSISTING OF:

ITEM	COST EACH	TOTAL
10 CRT (VT 100 or Equal)	1,000	\$ 10,000
2 Letter Quality Printer (Diablo or Equal)	3,000	6,000
2 LA 120 Printers	2,000	4,000
4 DOT MATRIX Printers (100 CPS or Better)	1,000	4,000
 TOTAL FOR CRT/PRINTER LOT		 \$ 24,000

APPENDIX B

1 CRT/PRINTER LOT CONSISTING OF:

ITEM	COST EACH	TOTAL
20 CRT (VT 100 or Equal)	1,000	\$ 20,000
2 Letter Quality Printer (Diablo or Equal)	3,000	6,000
2 DEC LA 120 (Printers	2,000	4,000
7 DOT MATRIX Printers (100 or Better)	1,000	7,000
 GRAND TOTAL FOR CRT/PRINTER LOT		 \$ 37,000

CONSOLIDATED PURCHASE LIST

The following cost estimates are based upon recent quotes from vendors and should be used as estimates only.

<u>ITEM</u>	<u>NUMBER</u>	<u>EACH</u>	<u>UNIT TOTAL</u>	<u>TOTAL</u>
<u>CRT/PRINTERS:</u>				
CRT's	580	\$ 1,000	\$580,000	
Letter Quality Printers	64	3,000	192,000	
DEC LA 120	64	2,000	128,000	
DOT MATRIX Printers	206	1,000	206,000	
				\$1,106,000
<u>SOFTWARE LICENSES:</u>				
DD8 Software	7	4,000	28,000	
MUMPS Operating System (ISH)	22	9,000	198,000	
VAX MUMPS Operating System	3	19,500	58,500	
DSM MUMPS V.2 Upgrade (New York, NY)	1	1,200	1,200	
Data General MUMPS Operating System	5	15,000	75,000	
Multiword Word Processing	21	4,500	94,500	
FORTRAN	3	7,128	21,384	
Basic Plus 2	2	8,100	16,200	
				\$ 492,784
<u>COMMUNICATIONS DEVICES:</u>				
Triple Modem (Racal VADIC)	31	1,000	31,000	
Modem DF 03-AC	14	1,300	18,200	
Acoustic Modems	2	500	1,000	
				\$ 50,200
<u>TAPE DRIVES & CONTROLLERS:</u>				
Tape Drive Controllers (TE16)	3	7,500	22,500	
Kennedy Tape Drives	9	10,000	90,000	
1 TE16-EA Tape Drive (Albany, NY)	1	21,250	21,250	
				\$ 133,750
<u>MEMORY:</u>				
Cache Memory	7	4,000	28,000	
256K Memory-MS11-LD	6	2,800	16,800	
256K Memory-MS11-MC (Lexington)	1	8,900	8,900	
256K Memory-MS11-MC (Martinez)	1	12,000	12,000	
256K Memory-POP 11/45 (Pittsburgh)	1	6,000	6,000	
128K Memory	2	6,000	12,000	
KT 24 Address Unit	1	4,000	4,000	
				\$ 87,700

BAR CODE EQUIPMENT:

Bar Code Readers	39	3,000	117,000
Bar Code Generators	7	4,000	<u>28,000</u>
			\$ 145,000

MULTIPLEXER:

TLC Multiplexer	2	\$ 3,400	\$ 6,800
DZ 11F Multiplexer	7	3,500	24,500
DZ11E Multiplexer	53	3,500	143,500
Statistical Multiplexer	6	5,500	33,000
DZ 11B Multiplexer	3	1,743	<u>5,229</u>
			\$ 213,029

DISK DRIVES, CONTROLLERS AND CARTRIDGES:

RL02-AK Disk Drives (San Francisco, CA)	2	4,300	8,600
RM03-AA (New York, NY)	1	30,000	30,000
RM03-AA (New York, NY)	1	20,000	20,000
RK711-EA Drive and Controller (Reno, NV)	1	15,000	15,000
RK07-EA Disk Drive (Reno, NV)	1	10,000	10,000
RM02-AA Disk Drive & Controller	4	29,300	117,200
RM02-AA Disk Drive	5	19,300	96,500
135 MB Winchester	4	20,000	80,000
<u>SPARE CARTRIDGES:</u>			
RP06	10	1,400	14,000
RM02	10	600	6,000
RM03	4	500	2,000
65 Removable	4	500	2,000
MASS Bus Controller	1	13,601	<u>13,601</u>
Converter Kit (RP06) (Oklahoma City)			

\$ 414,901

CENTRAL PROCESSING UNITS:

PDP 11/70 CPU or Equal	5	90,000	450,000
PDP 11/44 CPU or Equal (Washington)	1	85,000	<u>85,000</u>

\$ 535,000

CONFIGURED SYSTEMS:

11/44 (Configured)	6	91,000	546,000
VAX 11/780 (San Francisco)	1	345,370	345,370
VAX/11780 (Washington)	1	383,528	383,528
VAX 11/780 (Bay Pines)	1	401,235	<u>401,235</u>

\$1,676,133

MISCELLANEOUS:

Card Reader (Bay Pines, FL)	1	11,700	11,700
FP Processor (Bronx, NY)	1	5,000	5,000
Cabinets (Loma Linda)	1	3,060	3,060
Battery (Fort Howard, MD)	1	1,600	1,600
Embossor Interface	2	6,000	<u>12,000</u>

TOTAL COST

\$4,887,857

EQUIPMENT DISTRIBUTION LIST

CRT/PRINTER LOT (APPENDIX A)

Birmingham
 Fresno
 Ft. Howard
 Livermore
 San Francisco
 Washington V&DC

CRT/PRINTER LOT (APPENDIX B)

Albany
 Ann Arbor
 Bay Pines
 Bronx
 Brooklyn
 Buffalo
 Dallas
 Decatur
 East Orange
 Hines
 Lexington
 Loma Linda
 Martinez
 Memphis
 New York
 Oklahoma City
 Omaha
 Palo Alto
 Perry Point
 Pittsburgh
 Portland
 Reno
 Salt Lake City
 San Francisco
 Tucson
 Washington

CARD READER

Bay Pines

MUMPS OPERATING SYSTEM (LSH)

Albany
 Ann Arbor
 Brooklyn
 Bronx
 Buffalo
 Dallas
 Decatur
 East Orange

Hines
 Lexington
 New York
 Memphis
 Oklahoma City
 Omaha
 Palo Alto
 Perry Point
 Pittsburg (2)
 Portland
 Salt Lake City
 Tucson
 Washington

VAX MUMPS OPERATING SYSTEM

Bay Pines
 San Francisco
 Washington

BASIC LICENSE

San Francisco
 Washington

DMS V.2 MUMPS UPGRADE

New York

DATA GENERAL MUMPS OPERATING SYSTEM

Hines (5)

FORTRAN LICENSE

Bay Pines
 San Francisco
 Washington

MULTIWORD MUMPS WORD PROCESSING LICENSE

Albany
 Ann Arbor
 Brooklyn
 Bronx
 Bay Pines
 Dallas
 Decatur
 East Orange
 Hines
 Loma Linda
 Martinez
 Memphis
 New York
 Omaha
 Perry Point
 Pittsburgh
 Portland
 San Francisco
 Tucson

Washington
 TI CARRIER MULTIPLEXER
 Bay Pines (2)

STATISTICAL MULTIPLEXERS
 Palo Alto (2)
 San Francisco (2)
 Washington (2)

DZ 11E MULTIPLEXER

Albany (2)
 Bay Pines (5)
 Brooklyn (2)
 Bronx
 Dallas
 Hines
 Lexington (2)
 Livermore
 Loma Linda (2)
 Martinez
 Memphis (2)
 New York (4)
 Palo Alto (4)
 Perry Point (2)
 Salt Lake City
 San Francisco (3)
 Washington (6)

DZ 11F MULTIPLEXERS

Albany
 Dallas (2)
 Oklahoma City (3)
 San Francisco

MASS BUS CONTROLLER KIT

Oklahoma City

RACAL VADIC MODEM

Albany (2)
 Ann Arbor
 Brooklyn
 Buffalo
 Decatur
 East Orange
 Ft. Howard
 Fresno
 Hines
 Livermore
 Loma Linda
 Martinez
 Memphis
 New York

Palo Alto
 Omaha
 Perry Point
 Pittsburgh
 Portland
 San Francisco (4)
 San Francisco V&DC (4)
 Tucson
 Washington

TAPE DRIVE (TC-131)

Ann Arbor
 Bronx
 Buffalo
 Decatur
 East Orange
 Loma Linda
 Omaha
 Portland
 San Francisco V&DC

EMBOSSER INTERFACE (ASCII ADDRESSOGRAPH 6000 INTERFACE)

Martinez
 San Francisco

MODEM DP 03-AC

Albany (2)
 Bay Pines (2)
 Ft. Howard (2)
 San Francisco (4)
 Washington (4)

300/1200 BAUD ACOUSTIC MODEMS

Ft. Howard (2)

256K MEMORY-MS 11 LD

Dallas
 Ft. Howard
 Livermore
 Loma Linda
 Reno

San Francisco (M.D. #27)

256K MEMORY MS 11 MD

Lexington

256K MEMORY MS 11 MD

Martinez

256K MEMORY PDP 11/45

Pittsburgh

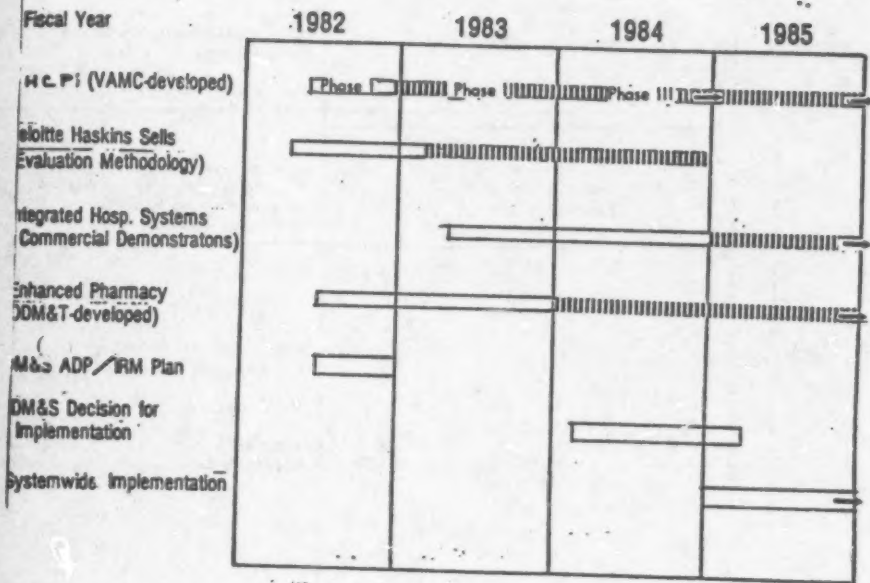
CACHE MEMORY (KK 11A)

Bronx
 Fresno
 Livermore
 Loma Linda

Palo Alto
 Reno
 San Francisco (M.D. #27)
 128 K MOS MEMORY
 Brooklyn
 Fort Howard
 RPO6 SPARE DISK CARTRIDGES
 Albany (4)
 Washington (6)
 BAR CODE READERS
 Albany (5)
 Bay Pines (5)
 Birmingham (3)
 Fort Howard (2)
 Perry Point (3)
 Oklahoma City (6)
 Salt Lake City (6)
 San Francisco (4)
 Washington (5)
 BAR CODE GENERATOR
 Albany
 Bay Pines
 Fort Howard
 Perry Point
 Salt Lake City
 San Francisco
 Washington
 PDP 11/44 CPU
 Washington
 PDP 11/70 CPU
 Lexington
 New York
 Palo Alto
 Oklahoma City
 Salt Lake City
 VAX CONFIGURED SYSTEMS
 Bay Pines
 San Francisco
 Washington
 R102 Disk Drive
 Bay Pines (2)
 Brooklyn (2)
 Dallas (3)
 Pittsburgh (2)
 RL02 DISK DRIVES WITH EXPANSION CABINET
 San Francisco V4DC (2)
 135MB WINCHESTER, PLUS 651D REMOVABLE, PLUS CONTROLLER
 Ft. Howard
 Fresno

ILLUSTRATIONS

DM&S ADP PLAN



Legend

Firm Plan 
 Tentative Plan 

FIGURE 1. DM&S ADP PLAN

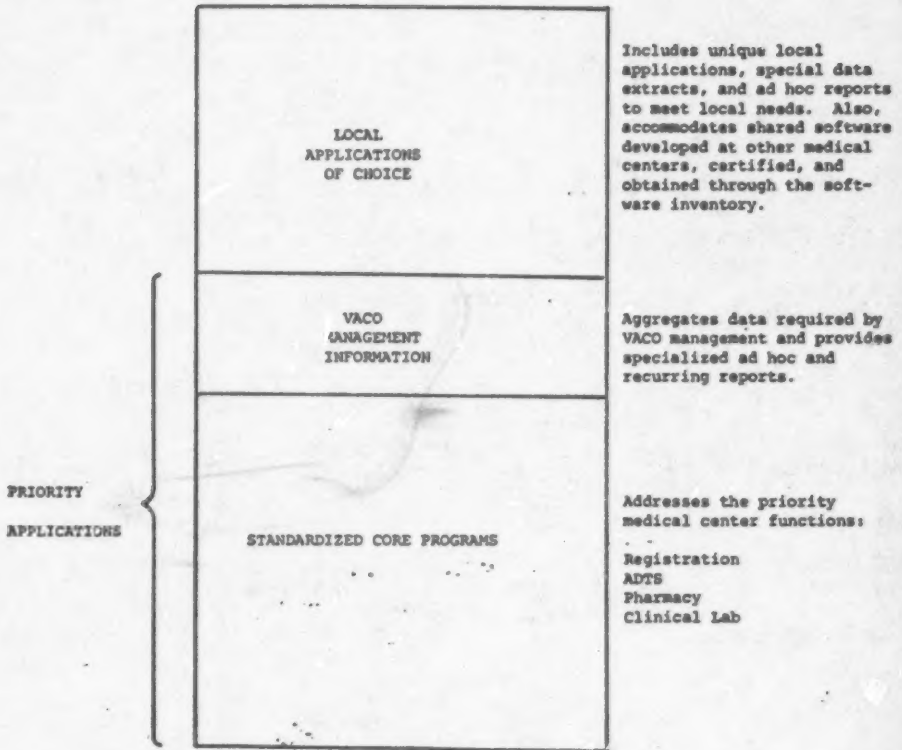


FIGURE 2. OPTIMAL COMPUTER UTILIZATION

DHCP IMPLEMENTATION STRATEGY

	MEDICAL CENTERS	HARDWARE	SOFTWARE
PHASE I (FY82)	Initial 30 Sites: * 6 Verification & Development Centers 18 VAMCs with Existing Resources 6 VAMCs with no Existing Resources	• Movement of Underutilized Equipment • Augmentation/Upgrade of Existing Equipment • Procurement of New Computer Configurations	Initial CORE Including Medical Administration (ADTS) and Outpatient Pharmacy
PHASE II (FY83)	34 Additional Sites Phase I Sites	Procurement of New Equipment for Phase II Sites Augmentation of Hardware at Phase I Sites	Initial CORE Enhancement to CORE (Addition of Inpatient Pharmacy and Clinical Laboratory)
PHASE III (FY84 +)	Remaining Medical Centers Phase I and II Sites	Procurement of New Equipment for Phase III Sites Augmentation of Hardware at Phase I and II Sites	Full CORE (ADTS, Inpatient and Outpatient Pharmacy, and Clinical Laboratory) extended to all wards and work stations Additional Software Development

* The Verification & Development Centers will be provided with additional hardware consistent with their special responsibilities. Their medical centers will also receive an initial staffing increase of 4 FTEE.

Figure 3.

PHASE I MEDICAL CENTERS

	Verification & Development Centers	Hospitals with Existing Resources	Hospitals with No Existing Resources
REGION 1	Albany	Bronx Brooklyn New York, NY	Buffalo
REGION 2	Washington	Ft. Howard Perry Point Pittsburgh	East Orange
REGION 3	Bay Pines	Birmingham Lexington Memphis	Atlanta
REGION 4	Hines		Ann Arbor
REGION 5	Salt Lake City	Dallas Oklahoma City	Omaha
REGION 6	San Francisco	Fresno Livermore Loma Linda Martinez Palo Alto Reno Tucson	Portland

Figure 4.

PHASE I APPLICATION DEVELOPMENT SCHEDULE

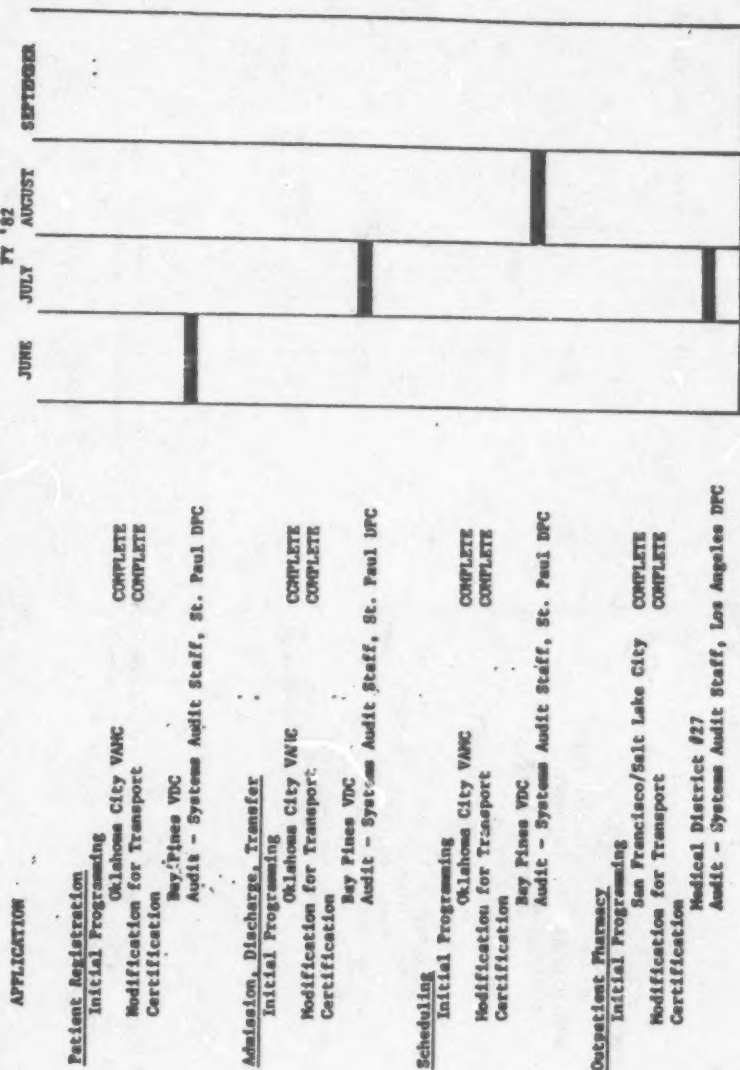


Figure 3.

ALTERNATIVE SOFTWARE FOR PHASE I

APPLICATION

Registration, ADT, SchedulingInitial Programming

San Francisco VAMC

Modification for Transport

Certification

COMPLETE
COMPLETE

Medical District #27

Audit - Systems Audit Staff,
Los Angeles DPCOutpatient PharmacyInitial Programming

Washington VAMC

Modification for Transport

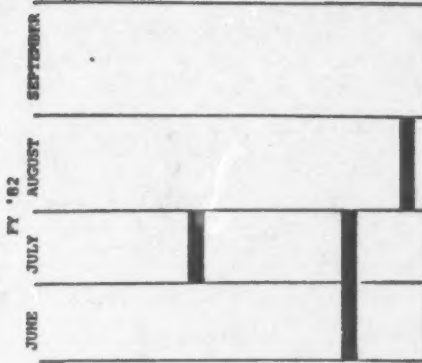
Certification

COMPLETE

Ft. Howard VAMC

Audit - Systems Audit Staff,

ANHS Project, Washi_gton DC



These two packages represent alternatives to the standard applications on the preceding page. Although they address the same functions, they are much more limited in scope and also require smaller computer configurations.

Figure 5A.

FIGURE 6 IMPLEMENTATION SCHEDULES

- **PRELIMINARY ACTIVITIES**
 - o Procurement Action
 - o Shipment of Computers from Hines CSC
 - o Initial Demonstrations

- **PHASE I HOSPITAL IMPLEMENTATIONS**

PRELIMINARY ACTIVITIES

Procurement Action

- Submission of APR and Supporting Documentation
- Preparation of RFPs
- CBD Amountment
- OMB Approval , 900 Limitation
- Release RFPs
- Bids Due
- Conduct Technical Evaluations
- Conduct Cost Evaluations
- Best and Finals
- Final Cost Evaluations
- Contract Award

JUNE '82	JULY '82	AUGUST '82	SEPTEMBER
6/8	7/2		
6/7	7/2		
	7/2		
	7/2		
	7/7	8/9	
		8/10—8/17	
		8/10—8/20	
		8/23—9/1	
		9/2—9/9	
			9/13

PRF "HUMANITY ACTIVITIES (cont'd)

RY 82 Shipment of Computers
from Hines CSC

- DEC PDP 11/70 #1 to Albany
 - o Requested Pack Date
 - o Requested Ship Date
- DEC PDP 11/70 #3 to Pittsburgh
 - o Requested Pack Date
 - o Requested Ship Date
- DEC PDP 11/70 #4 to Memphis
 - o Requested Pack Date
 - o Requested Ship Date
- DEC PDP 11/74 to Hines VAMC
 - o Requested Pack Date
 - o Requested Ship Date
- Data General Eclipse M/600 to Hines VAMC
 - o Requested Pack Date
 - o Requested Ship Date
- DEC PDP 11/70 #2 to Perry Point
 - o Requested Pack Date
- Data General Eclipse MV-8000 Control to VAMC Hines (Will remain in CSC building)

PRELIMINARY ACTIVITIES (cont'd)

Initial Demonstrations

ALBANY /AWC

- Completion of site preparation
- Shipment of FDP 11/70 from CSC
- 11/70 Delivery
- Delivery of necessary terminals
- DEC installation and checkout
- Acceptance Test
- Hospital personnel training
- Preparation of files
- Software installation - MSG
- System Test
- Hospital "Live" with Registration
- Software installation - ADT
- System Test
- Hospital "Live" with ADT
- Software installation - SCHED
- System Test
- Hospital "Live" with Scheduling
- Complete MAS data base
- Software installation - Outpatient Pharmacy
- System Test
- Hospital "Live" with Pharmacy
- Completion of Pharmacy data base
- Evaluation of Albany Demo

(This demonstration involves the Oklahoma City version of the Oklahoma City version of the MAS package and the Salt Lake City version of Outpatient Pharmacy.)

JUNE '82	JULY '82	AUGUST '82	SEPTEMBER '82
	7/12		
	7/12		
	7/15		
	7/26		
	7/30		
6/30	7/30	8/1	
		8/1	
		8/7	
		8/9	
		8/15	
		8/20	
		8/23	
			9/1
			9/10
			9/13
			9/18
		8/1	
		8/7	
		8/9	
			9/13
			9/20-9/30
			9/20-9/30

PRELIMINARY ACTIVITIES (cont'd)

FORT HOWARD VAMC

- Completion of site preparation
- Installation of Additional Printer
- Hospital Personnel Training
- Preparation of Files
- Software Install - MAS
- System Test
- Hospital "Live" with MAS
- Complete MAS Database
- Software Install - Outpatient Pharmacy
- System Test
- Hospital "Live" with Pharmacy
- Completion of Pharmacy Data Base
- Evaluation of Ft. Howard Demo
- System Audit

This demonstration will involve the District #27 version of the MAS package and the Washington, DC version of the Outpatient Pharmacy. The Pharmacy demonstration will also support the Systems Audit Staff review.)

JUNE '82	JULY '82	AUGUST '82	SEPTEMBER
COMPLETE			
	7/30		
	7/30		
-6/22			
6/23			
	7/7		
	7/15	8/15	
6/26			
	7/17		
	7/19		
			9/15
			9/20-9/30
		8/28	

Figure 6.: PHASE I IMPLEMENTATION SCHEDULE

STATION	'62 June	July	Aug	Sept	Oct	Nov	Dec	'63 Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Albany	Reg/ADTS/Opt Pharmacy																		
Ann Arbor	Site Preparation					Reg/ADTS					Opt Pharmacy								
Atlanta	Site Preparation					Reg/ADTS					Opt Pharmacy								
Bay Pines						Reg/ADTS					Opt Pharmacy								
Birmingham ①						Opt Pharmacy													
Bronx	Site Preparation					Reg/ADTS					Opt Pharmacy								
Brooklyn	Site Preparation					Reg/ADTS					Opt Pharmacy								
Buffalo	Site Preparation					Reg/ADTS					Opt Pharmacy								
Dallas	Site Preparation					Reg/ADTS					Opt Pharmacy								
East Orange	Site Preparation					Reg/ADTS					Opt Pharmacy								
Fort Howard	Reg/ADTS/Opt Pharmacy																		
Fresno ②																			
Hines ③																			
Lexington																			
Livermore ④																			

- ① Existing ADTS - Honeywell Patient Care System
- ② Existing ADTS - San Francisco Version
- ③ Existing Pharmacy - District #26 APPLES
- ④ Existing ADTS - Oklahoma City Version
- ⑤ Existing ADTS - San Francisco Version and
Existing Pharmacy - Salt Lake City Version
- ⑥ Existing ADTS - Honeywell Patient Care System and
Existing Pharmacy - Enhanced Pharmacy (ODM&T)

Computer Equipment Identified
For Re-Deployment

<u>Description</u>	<u>Current Location</u>	<u>Redeployed Location</u>
DEC PDP 11/70 - #1	Hines CSC	Albany, NY VDC
DEC PDP 11/70 - #2	Hines CSC	Perry Point, MD VAMC
DEC PDP 11/70 - #3	Hines CSC	Pittsburgh, PA VAMC
DEC PDP 11/70 - #4	Hines CSC	Memphis, TN VAMC
DEC PDP 11/34	Hines CSC	Hines V&DC - VAMC
Data General Eclipse MV-8000	Hines CSC	Hines V&DC - VAMC
Data General Eclipse M/600	Hines CSC	Hines V&DC - VAMC
Data General Eclipse M/600 (6)	Hines CSC	6 Selected Phase II Medical Centers

Figure 7.

APPENDIX

FUNCTIONAL DESCRIPTION
OF THE

MEDICAL ADMINISTRATION
HEALTH CARE INFORMATION SYSTEM

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This manual will serve as a functional overview of Version 1.1 of the Medical Administration Health Care Information system developed at the Oklahoma City VA Medical Center.

The author wishes to thank Curtis Lyon and Judith Thompson for their invaluable assistance. Without their insights, untiring efforts, and constant desire to improve, this project could not have been accomplished.

SECTION I - INTRODUCTION

1.1 PURPOSE - The Medical Administration Health Care Information System (MAHCIS) is an automated patient information system designed to improve the efficiency, effectiveness, and quality of medical administration services necessary for the day-to-day operation of a VA Medical Center. While the primary intent of this project is to provide automated assistance to the Medical Administration Service (MAS), it is also intended that the concepts and programs developed by this project will provide a "core" system for other automated systems requiring a patient data base.

1.2 BACKGROUND - Prior to Public Law 93-82 in 1972, the emphasis of the VA Health Care System was to provide primarily in-hospital care with out-patient services only rendered for service-connected disabilities. Since Congress has authorized the use of VA Health Care facilities for non-service connected ambulatory health care, the demand for ambulatory services has increased to the point that the majority of services rendered by Medical Administration Service are dedicated to serving the ambulatory care facilities. This movement toward increased utilization of ambulatory care has been one of the most visible changes within the VA Health Care System within the past ten years. It should be noted that both the public and the private sector have very clearly demonstrated that both increased quality of care and decreased economic demands are derived from such a change in the utilization of health care facilities. Outpatient care has been shown to increase the accessibility to the health care delivery system, thereby:

1. Insuring more effective utilization of scarce resources;
2. Improving the continuity of medical care by making it easier for patients to seek initial and follow-up treatment; and
3. Reducing the need for unnecessary or preventable admissions.

These benefits improve the economy of health care by providing a less costly environment for the delivery of medical care, balancing the utilization of resources, and assisting in the reduction of morbidity and mortality. Due to the original emphasis by the VA Health Care System on ambulatory care

program in 1972 necessitated a re-thinking and reorganization of the administrative processes for health care delivery. One of the results of this reorganization was the development by DM&S/ODM&T of a hospital information system based around a Honeywell computer. Primary administrative functions of this system have been to provide for the registration of patients, ambulatory scheduling of patients, and hospital admissions/discharge/transfer. While this system is operational in several VA Medical Centers at this time, improvements in computer technology and advanced concepts of system design make it possible for the Medical Administration Health Care Information System to provide these same services at an even greater cost savings.

SECTION II - SYSTEM SUMMARY

2.1 OBJECTIVES - The objectives of the Medical Administration Health Care System are:

1. To utilize automation techniques to assist in improving the efficiency and quality of Medical Administrative Support for direct patient care activities;
2. To provide a foundation system for other automated patient care assist programs;
3. To provide management statistics and data for both local and national use as can be provided without increasing the work requirements of those individuals who are directly involved in providing or assisting in the providing of patient care;
4. To provide an integrated, modular system that is easy to use, available when and where needed, provides useful user/patient interactive information, and is easily adapted to the implementation environment.

2.2 OVERVIEW - The Medical Administration Health Care Information System utilizes a patient-oriented data base concept with highly interactive terminal interfaces. Of utmost importance is the capture of data in the ordinary day-to-day operation with consequent elimination of repetitive data recording. While the emphasis of this system is on operational needs, management statistics and data collection are considered an important by-product of all operational activities. The concept of maintaining the present administrative medical record (patient chart) and requiring that all administrative information concerning the patient pass through the MAMCIS system prior to being placed in the record, results in both systems maintaining highly accurate up-to-date patient information.

The Medical Administration Health Care Information System is composed of four (4) subsystems. These are:

1. Patient Registration Subsystem - This subsystem is responsible for the entering and editing of a patient identifying and demographic information, the logging of unscheduled requests and applications for medical care, the dispositioning of all unscheduled and application for care visits, the maintenance of patient eligibility and entitlement data, and the

accumulation of management data from these operations.

2. Ambulatory Scheduling Subsystem - This subsystem is responsible for the maintenance of clinic profiles, the establishment of clinic enrollment, the confirming and cancelling of appointments, the recording of appointment disposition, and the accumulation of management data from these operations.
3. The hospital admission/discharge/transfer - This subsystem is responsible for the bed control functions associated with the admitting, discharging, and transferring of a patient and the accumulation of management data from these operations.
4. Medical Record Tracking Subsystem - This subsystem is responsible for the requesting, charging, recharging, and checking in of patient's records and the accumulation of management data from these operations.

2.3 SUMMARY OF IMPROVEMENTS -It is intended that this system enable the Oklahoma City VA Medical Center to more efficiently provide health care services to a larger number of eligible veterans. Specific improvements can be stated as follows:

1. Accessibility - The system allows multiple authorized users access to a variety of patient information simultaneously. This greatly increases the ability of a VA Medical Center's Medical Administration Service staff to respond in a timely manner to the various and often simultaneous requests for action and assistance in the care of the patients.
2. Increased efficiency - By utilizing the concept of on-line data capture in the ordinary day-to-day operation, it is possible to virtually eliminate the double recording and counting of various statistical and process parameters required by VA Central Office directed reporting systems. The vast majority of the data required by these systems (AMIS, PTF, 202 Sampling) is data that the system will capture on a routine care-process basis.
3. Decreased errors - The on-line, interactive nature of this system allows the ability to identify and correct errors at the time they are made rather than later. Further, the utilization

of modern techniques of table driven look-up will free MAS personnel from memorizing various tables and code numbers due to the fact that the machine can translate the ordinary terms used into the appropriate codes. This concept has been shown to decrease the error rate of coding data by as much as 95%.

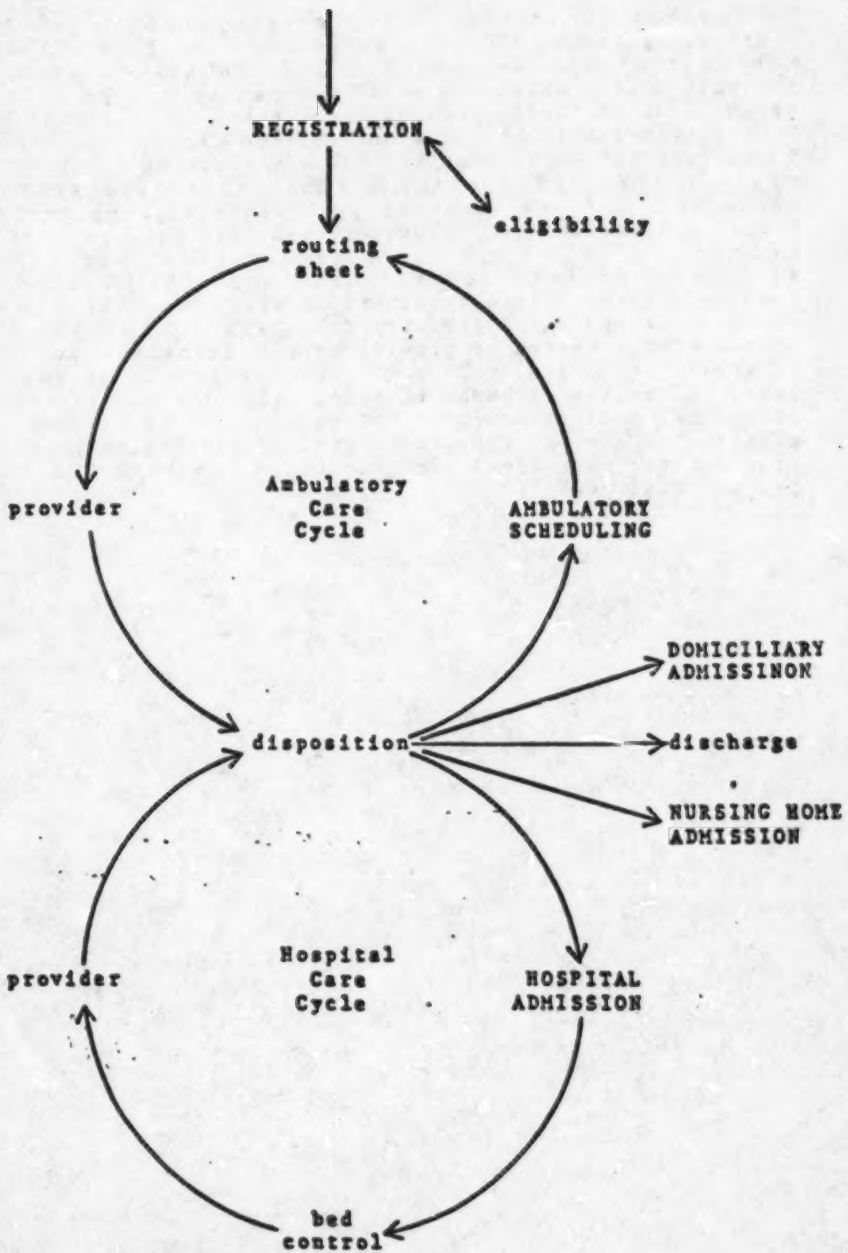
4. Improved communication - One of the major functions of the MANCIS system is to coordinate the various operations required to process patients' Applications for Care. One of the greatest improvements of the system is in the area of coordinating the communication between various MAS functional areas such as admissions, eligibility, medical records, outpatient clinical areas, travel, and other non-MAS areas such as the professional provider staff.
5. Improved scheduling - With the MANCIS Ambulatory Scheduling subsystem it is possible to schedule patients for visits by specific providers, on specific days, and at specific times. Further, it is possible to easily coordinate the scheduling of visits to different clinics on the same day so as to decrease the patient's waiting/travel time, and insure adequate health care delivery. While this facet of the system increases tremendously the convenience for the patient, it also simultaneously improves the efficiency of ambulatory health care.
6. Increased control - Through the use of the Hospital Admission/Discharge/Transfer subsystem it is possible for the Medical Administration staff to have increased control and knowledge of the inpatient flow and bed assignments. This control greatly improves the ability to match the needs and desires of the patient being admitted with the facilities available in the hospital. In this way, improved medical care and greater medical efficiency can be achieved.
7. Cost containment - Through the improvement of staff efficiency and the reduction in staff manhours currently wasted on manual data collection and collation, a significant cost containment is realized. Ongoing cost containment procedures can be defined and implemented due to the fact that, with this system, work flow requirements and projections can be accurately calculated and analyzed. Further, more rigid controls can be placed on routine, non-analytical functions, thereby controlling the resources expended in these areas.

SECTION III - FUNCTIONS

3.1 GENERAL - An overview of the patient flow in a VA Medical Center is portrayed in Figure 1. All new patients or patients with new problems must enter the VA system through an Application for Care. This is processed by the Registration subsystem utilized by the Registration unit. After a patient's application for care has been received and their eligibility for VA services determined, a routing sheet is prepared and the patient is evaluated by a provider. After the provider has completed his/her examination, and a need for care has been determined, a disposition of the patient is made. In general, the dispositions are:

1. The patient needs and is eligible for outpatient ambulatory care.
2. Patient needs and is eligible for hospital inpatient care.
3. Patient needs and is eligible for domiciliary or nursing home care.
4. Patient is not in need of any further care and can be discharged from active status.

As can be seen by Figure 1, there is a great interdependency and interrelationship between the registration, ambulatory scheduling, and hospital admission/discharge/transfer subsystems. Not only is the exchange of data profound, but also individual MAS clerks are involved with each part of this system. For instance, an admission unit clerk may at one moment register a new patient, the next moment disposition a patient to the ambulatory care cycle, while the next patient is hospitalized. This can become extremely complex when each admission clerk deals with the scheduling of patients to 30 or more outpatient clinics and admits patients to the up to 30 different medical services handling the inpatient population. It is imperative to the efficient operation of Medical Administration Service to have the ability for each of the clerks to rapidly perform different functions either for the same patient or for different patients.



To further demonstrate the interdependence of these subsystems, Figure 2 demonstrates the data flow within the MANCIS system. The registration subsystem acts as a foundation upon which all other subsystems can be built and encompasses the basic patient demographic data as well as the VA specific eligibility and entitlement data. The Ambulatory Scheduling Subsystem, Medical Records Tracking Subsystem, and the Hospital ADT Subsystem then record specific data concerning patient movements, enrollments, and statuses. Future systems such as laboratory systems, pharmacy systems, etc. will also incorporate the concept of accumulating additional patient related data and will require data transfers between themselves and between the patient's basic demographic and VA eligibility data base. It is the intent of the MANCIS System to provide this foundation core system to create, maintain, and provide access to the patient data base. While the exchange of information between a vast array of medical patient-oriented subsystems can be enormous, the establishment of a cohesive, organized foundation core system provides the high level management that medical information systems require.

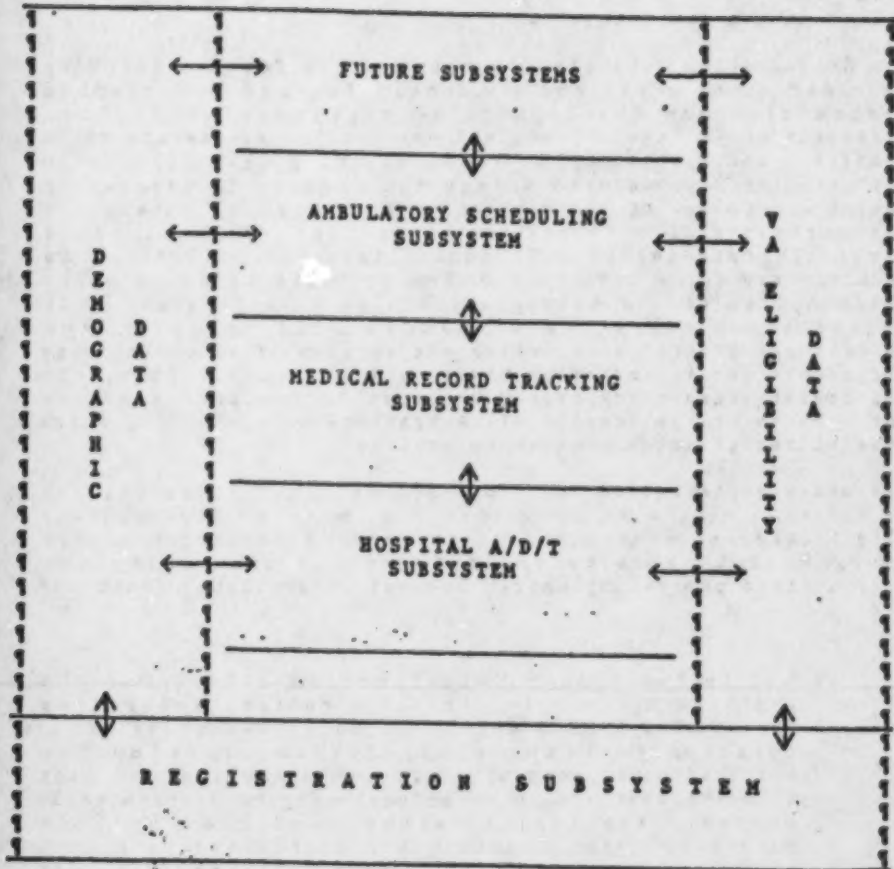


FIGURE 2

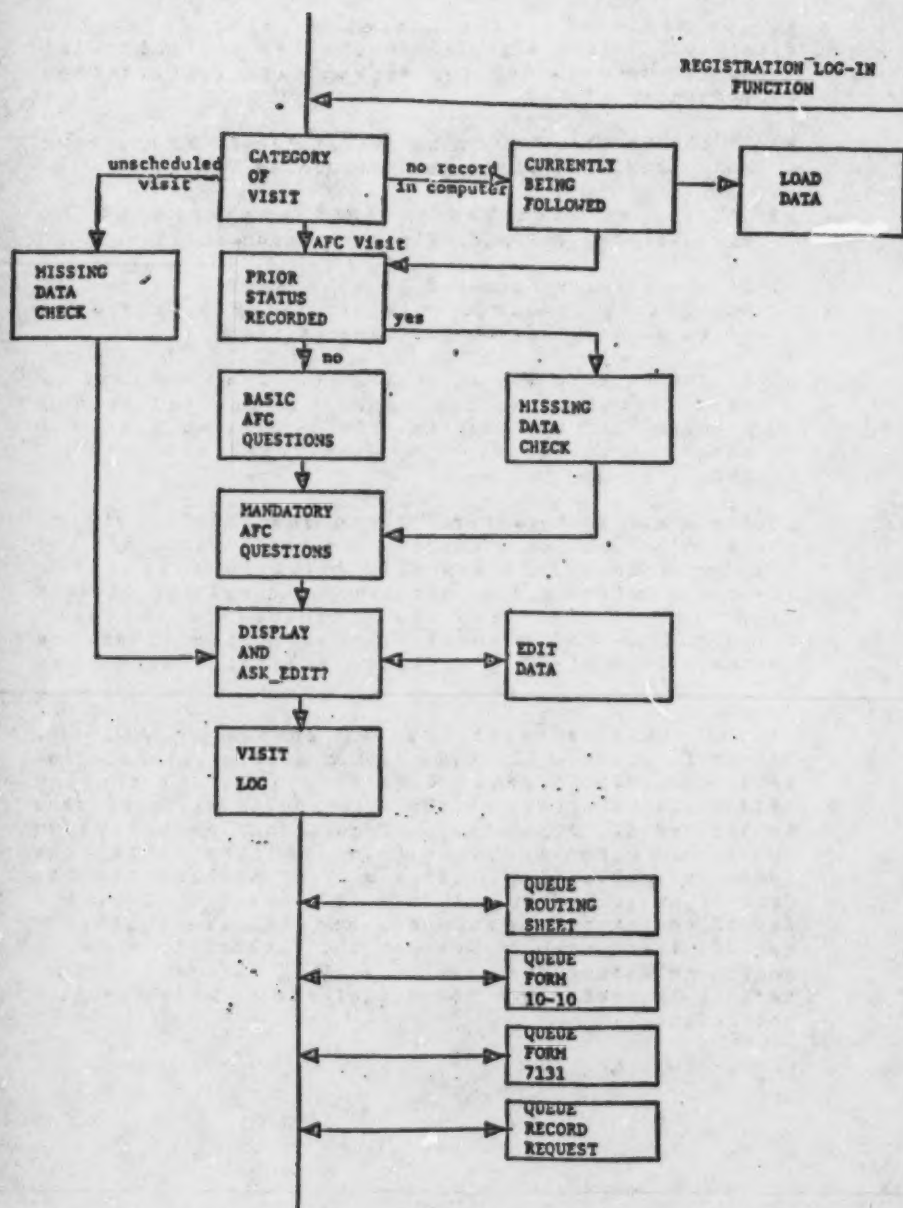
3.2 Registration Subsystem

The Registration subsystem is responsible for the entering and editing of a patient's identifying and demographic information and the logging of registration visits. According to VA regulations, all unscheduled visits are to be processed and statistically recorded using the Application For Care (AFC) procedures unless the veteran is covered by one of the following administrative programs: 1) Veteran is currently residing in a VA nursing home; 2) Veteran is currently residing in a VA domiciliary; or 3) Veteran is seeking care for a condition currently being followed under the auspices of the Ambulatory Health Care Program. The registration subsystem of MANCIS will evaluate the entitlement program under which the veteran is receiving care and record the registration visit appropriately. Thus, the MAS registration clerk is not responsible for understanding the nuances or application of VA regulations concerning which type of registration program to utilize.

The other registration functions are designed to assist MAS in maintaining the registration log, maintaining accurate eligibility and demographic data, and in producing useful management statistics and information concerning the registration processing unit. The set of available functions is:

1. Log In Function - This function allows for the registering (logging-in) of a patient requesting unscheduled health care. As described above, this function is responsible for determining the appropriate category of visit and prompting the user with the appropriate questions. Figure 3 graphically presents the logical steps performed by this function. Upon entering the log-in function, the system will evaluate the current computer file for the veteran. If there is no prior data contained in the files, the system will prompt the user with the question of whether the patient is currently being followed by that VA Medical Center. If the response to this question is 'YES', the system will branch to the Load patient data function and then re-evaluate the category of visit parameters. This loop will be primarily utilized only during the initial months of implementation and is designed to accurately capture data concerning active patients not visiting the Medical Center since implementation of the Registration Subsystem.

REGISTRATION LOG-IN FUNCTION



If the patient's file contains prior data, the category of visit algorithm evaluates the following logic for determining the appropriate registration procedures:

- a) If the veteran has an active status of VA nursing home, register visit as **Unscheduled Visit**;
- b) If the veteran has an active status of VA domiciliary, register visit as **unscheduled visit**;
- c) If the veteran does not have an active status of Ambulatory Health Care Program (AHC), register visit as **Application for Care (AFC)**;
- d) If the veteran has an active status of AHC, ask if care requested is for condition covered by AHC program. If response is 'YES', register visit as **unscheduled visit**, otherwise register visit as **AFC**.

If the visit is registered as an **unscheduled visit**, the log-in function evaluates the patients record for missing demographic and eligibility data points. Items with missing data are requested and the answers recorded. The program then branches to the data display/final edit routine. The remainder of the **unscheduled visit log function** is identical to the **AFC steps**.

If the visit is registered as an **AFC visit**, the log-in function evaluates whether a prior application is on record. If prior data is present, a missing data check identical to the **unscheduled visit routine** is performed. Otherwise, all questions contained on the **Application for Care form (VA form 10-10)** are requested. Finally, whether a prior **Application for Care** is on record or not, all **AFC visits** will have a set of mandatory questions asked. These questions include items such as whether the veteran is able or unable to defray the cost of medical care and whether care is requested due to an accident or a job related condition.

Once all questions are asked, the data is displayed and the user is allowed to edit any data points. Once the data is accepted, the visit is logged in the Registration log file and a series of outputs are queued if appropriate. These are:

- a) Routing sheet - only available if the scheduling subsystem is operational;
 - b) VA form 10-10 - only if Application for Care visit;
 - c) VA form 7131 - only if appropriate (see eligibility function);
 - d) Medical record request - only if the record request system is operational.
2. Disposition Function - This function allows the user to enter (or edit) the disposition of a registration visit. Upon entering this option, all of the patient's registration entries for that day are displayed and the user is allowed to select the entry desired. If the selected entry has previously been dispositioned, the user is allowed to edit the data. If the entry selected is pending, the user is asked to enter the visit disposition, the name of the provider who saw the patient, and whether or not the patient visited lab, X-ray, or pharmacy. The patient's treatment status is automatically updated based on the disposition entered and the log-in category (see Table 1). Various eligibility statuses are also checked. If data is missing from mandatory data points in the patient's registration data base, these data points are reasked at this time. If the patient's eligibility is non-verified and a continuing form of care has been indicated, an eligibility data request form (VA Form 7131) is automatically queued. (Note: This option can be altered by the Implementation parameters - see the Implementation Guide.) Finally, the registration disposition is recorded in the registration log as well as in the patient's file and the time from registration till disposition is saved for management review.

**REGISTRATION DISPOSITIONS
and
ASSOCIATED ACTIONS**

<u>Disposition</u>	<u>Resultant Status</u>	<u>Other actions</u>
Admit to Hospital	Hospital Inpatient	Cancel AHC Status
Admit to N.H.	Nursing Home Inpt	
Admit to Domicil.	Domiciliary Inpt	
Schedule Admit	Schedule Admit	
Dead on arrival	Inactive	Cancel all statuses
Future Appointment		
SC >50%	Outpatient	
SC condition	Outpatient	
NSC post Hospital	Outpatient	
Otherwise	AHC	
No Care Needed	No change	
Left before exam completed	No change	
Ineligible	No change	Cancel all statuses
Error.	No change	Cancel Pending visit only

TABLE 1

3. **Eligibility Function** - The Eligibility Function allows the eligibility section of HAS to review a veteran's eligibility data, print a VA Form 7131, track the status of a previously printed VA Form 7131, edit/enter eligibility data, and "verify" the accuracy of the eligibility data contained in the patient's file. The printing of a VA Form 7131 can originate from any of the following actions:

- a. A patient with unverified eligibility data and dispositioned for future care, will have a VA Form 7131 automatically generated at the time of dispositioning (or registration depending on implementation parameters).
- b. The editing or changing of any eligibility data element in a patient's file will automatically generate a 7131.
- c. The admitting to in-patient status of any patient who is service connected or receiving monetary VA benefits, will automatically generate a 7131.
- d. The explicit requesting of a VA Form 7131 by a user.

The process of maintaining the eligibility files is charted in figure 4 and described below. Upon printing a VA Form 7131, an automatic entry in the unmailed 7131 log is created. When the form is mailed to the Regional Office, the user enters that fact and the unmailed log entry is deleted and a pending 7131 log entry is automatically generated. When the Regional Office response is received, the eligibility clerk enters/edits the appropriate data elements in the patient's eligibility record and then indicates that the eligibility data is "verified". The action of verifying a patient's data automatically deletes the entry from the pending 7131 file. It should be noted, that in order to maintain the proper controls on patient eligibility and entitlement only those clerks who have a complete understanding of the eligibility process should be allowed to have access to the verification option.

ELIGIBILITY WORK FLOW

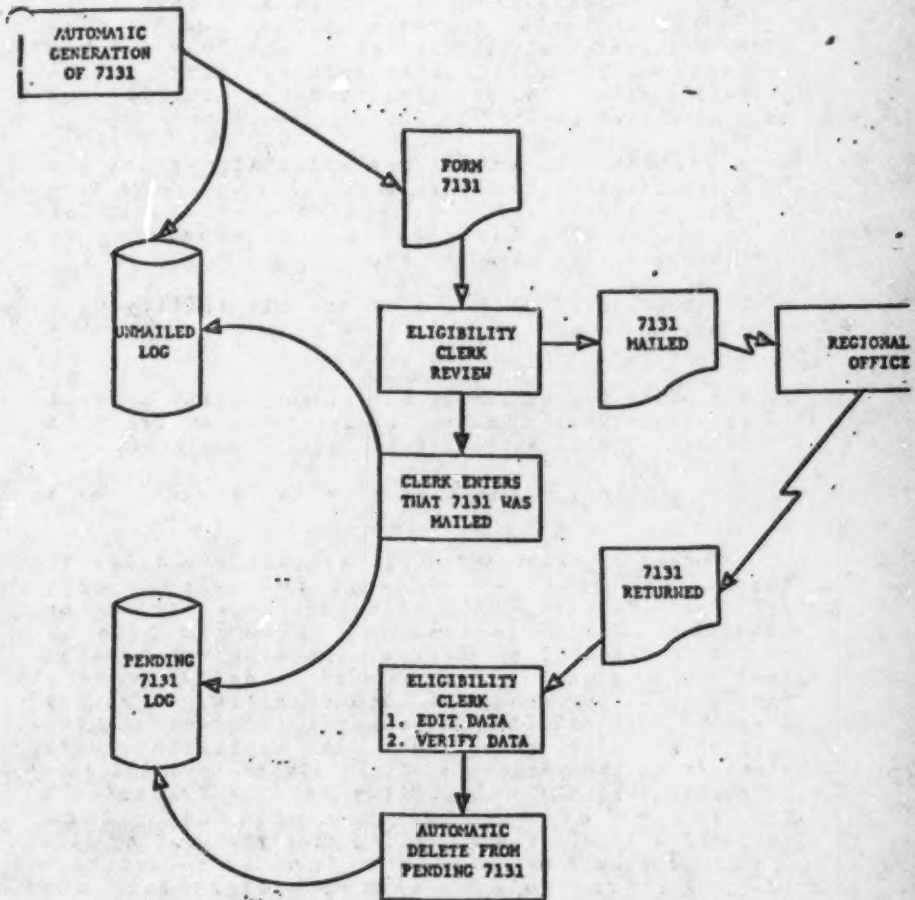


Figure 4

4. **Patient Data Edit Function** - This function is used to edit all patient demographic and VA eligibility data points (see Table 2). To facilitate the ease of operation, the data is divided into two groups (demographic data and administrative data). These divisions are further subdivided to facilitate the easy selection of the specific data elements to be edited. When selected, the current value of a data point is displayed and the user is allowed to either accept the current value, enter a new value, or erase the data field.
5. **Miscellaneous Registration Functions** - The following miscellaneous functions are also available in the Registration subsystem.
 - a. **View Registration Log** - This function provides the user the ability to view on a CRT screen the registration log for a specific date. The user has the option of viewing all patients on the log beginning at a specified time or all patients for the day. The log includes the time of log-in, type of visit, and visit status. If the patient has been dispositioned, the time of disposition is displayed.
 - b. **View Pending Dispositions** - This function provides the user with the ability to view on a CRT screen a list of all registration visits that have not been dispositioned. This display includes the time of log-in, type of visit, and the initials of the user who logged-in the patient. The requesting user is allowed to choose between viewing the entire pending list or just those patients that have delayed dispositions.
 - c. **View Delayed Dispositions** - This function provides the user with the ability to view on a CRT screen all delayed dispositions for a specified date. This display includes the log-in time, the disposition time, the disposition, and the reason for the delay.

REGISTRATION DATA POINTS

DEMOGRAPHIC DATA	VA SPECIFIC DATA
Name	Disability Data
Social Security Number	Disability codes and I
Address - mailing	Total Disability I
- legal residence	Disability Payment Amount
Phone - home	Service Record
office	Branch of service
and 2 others	Date entered
Misc. - birthdate	Date discharged
birthplace	Discharge type
sex	Service number
marital status	POW status
race	Benefits
occupation	ATA amount
religion	Housebound amount
Next of Kin - name	Social security amount
address	Military disability amount
phone	Military retirement amount
relationship	VA pension
Person to Notify	Miscellaneous Data Points
name	Claim number
address	Claim folder location
phone	Health insurance
relationship	Employment/employer data
Person to Receive Possessions	10-10 Data Points (non-editable)
name	Financial need affirmation
address	Need for care related to:
phone	Occupation
relationship	Accident

TABLE 2

- d. **Pharmacy Only Log-in** - The use of the Pharmacy Only function is intended for those patients coming to a Medical Center for the purpose of prescription refill only. This function requires that the patient have a current active treatment status and will automatically generate a disposition of "PRN". Thus, it is not necessary for the user to disposition pharmacy only log-in patients. The pharmacy only function will allow the user to queue a routing sheet or to edit/delete a pharmacy only visit previously logged in on the same day. Pharmacy only visits appear on the pharmacy only log sheet and not on the registration log sheet. Finally, the entry of a pharmacy only visit does not dictate that the "Category of Visit" reported to VA Central Office for the patient's visit will be mandatorily "Prescription Refill Only". Rather, the system will report a category of visit of "Prescription Refill Only" only if the pharmacy visit is the only visit recorded for that day. Otherwise the most significant visit category will be reported.
 - e. **Retro Log-In** - This function gives the user the ability to enter patients to the registration log for prior dates. The date for which the log-in is effective may not be greater than a system-defined time prior to the current date. The log-in categories allowed under this option are unscheduled AHC and Application for Care. Further, the Retro Log-In function requires that the disposition of the visit be entered before the log entry is actually created.
 - f. **Patient Treatment Status Edit** - This function allows the user to edit or delete any of the current patient treatment statuses.
 - g. **Load Patient** - The Load Patient function is used for initially entering data for patients that are currently being followed by the facility but do not have a scheduled visit or Application for Care on the date of entry. This function is primarily used for the initial loading of patients upon system implementation. Data elements entered through this function include not only the patient's demographic and administrative data, but also the assignment of the patient's current treatment status.
6. **Registration Outputs** - The following outputs are generated by the Registration subsystem. Examples of

these are outputs are contained in Appendix A.

- a. Registration Log
- b. Delayed Disposition List
- c. Pending Disposition List
- d. VA Form 10-10 (Application for Care)
- e. VA Form 7131 (Eligibility Data Request Form)
- f. Pending 7131 List (Unmailed and pending)
- g. Social Security Number Exception List
- h. Disposition Summary Report
- i. AMIS 331 Report
- j. World War I Veteran Visit Report
- k. Load List
- l. Pharmacy Only Log
- m. AMIS 358 Report

3.3 Ambulatory Scheduling Subsystem

The Ambulatory Scheduling subsystem is responsible for the maintenance of clinical profiles, the establishment of clinic enrollment, the confirming and cancelling of appointments, and the recording of management data from outpatient visits. Optimum control is given to the user not only in the defining of clinics and scheduling of future appointments, but also in the rescheduling of patient visits when clinic appointment times must be changed.

The Ambulatory Scheduling Subsystem will be responsible for the following functions:

1. Confirm Appointments Function - This function allows for the booking of both inpatients and outpatients to established ambulatory clinics. Appointments can be made up to twelve months in the future (this can be extended easily if necessary). Scheduling parameters include not only the desired clinic and appointment date, but also the desired provider and time of day. The desired provider can be defaulted to either the last provider seen or a specified provider. For those facilities with house staff programs in outpatient clinics, the scheduling subsystem will allow the creation of a set cadre of patients with a default provider such as "Resident 1" or "Intern 4". Through the use of the synonym ability of the File Manager/Dictionary Utility, the actual house staff provider's name can then be associated with these sets of patients. This will provide not only an improved training environment but will also provide a continuity of care from both the providers' and patients' perspective.

The confirm appointment function will also allow the user to book multiple appointments to different clinics on the same day, multiple appointments to the same clinic on different dates, and to book desired laboratory, x-ray and special procedures at the same time as clinic appointments. Special transportation needs can be noted at the time the appointment is made and the confirmed appointments function will allow the MAS user to fill all available appointment slots as governed by the clinic profile. Each clinic, or provider, can then specify rules for overbooking. Whenever a user attempts to overbook a clinic, these rules will be displayed. Even in cases where a provider or a clinic does not desire to have any overbookings, the Confirm Appointments function will allow the user to overbook after an appropriate message has been displayed. This ability is

necessary in order to handle emergency and other extraordinary situations. To safeguard abuse, overbookings, as well as regular appointments, record the identity of the user in the scheduling files.

2. **Cancel Appointment Function** - This function allows the ability to cancel, and where desired, rebook appointments. If the appointment is rebooked, all laboratory, x-ray and special studies requested for the previous appointment will be rebooked along with the new appointment.
3. **Appointment Disposition Function** - This function allows the user to enter (or edit) the disposition of a clinic visit and to enter/edit various data points required for VA Central Office outpatient reporting systems. For patients that did not show for their scheduled appointments (no shows), it is possible to automatically rebook the patient for the next available appointment and to queue a reminder letter telling the patient of the new appointment date and time. Patients with multiple consecutive no-show appointments will be flagged and the user notified of the desired action. (Each clinical provider can specify their preferred action for consecutive no-shows.)
4. **Clinic Profile Maintenance Function** - This function allows the establishing and editing of clinic profiles. Clinics and providers are allowed to have different profiles for different days of the week and to define individually specific actions for overbooking, consecutive no-shows, etc. Inherent in the concept of the clinic profile is that each clinic director will have optimum control in defining the various parameters governing the appointments that can be scheduled in that specific clinic. These parameters then guide and direct the HAS personnel during the appointment making process without each clerk having to memorize the nuances of each specific clinic or provider.

This function will also allow the user to book out a clinic or provider for a specified series of days or a specified span of time. Patients affected by such a book out, can be either listed for manual rescheduling or the scheduling subsystem will automatically rebook the patient for the next available appointment slot:

5. Miscellaneous Scheduling Functions -

- a. View Clinic Schedule - This function provides the user the ability to view on a CRT screen the clinic schedule for a specific date.
- b. View Provider Schedule - This function provides the user the ability to view on a CRT screen a provider's schedule for a specific date.
- c. View Pending Clinic Dispositions - This function provides the user the ability to view on a CRT screen a list of all visits to a specific clinic that have not been dispositioned.
- d. View Clinic Profile - This function provides the user the ability to view on a CRT screen the clinic profiles for a specified clinic and/or a provider.
- e. View Patient's Past Visits - This function provides the user the ability to view on a CRT screen a list of a specific patient's past visits to either a specified clinic or the entire outpatient program. This list is produced in reverse date order with the most recent appointments first.
- f. Clinic Enrollment - This function provides the user the ability to enter/edit a patient's enrollment in any clinic. Patients may be enrolled on either a consult basis or continuing care basis (active patient). Rules established in the clinic profile concerning enrollment are applied by this function.
- g. Batch Entry - This function allows the user to enter a batch (or list) of clinic visits for a clinic which does not maintain a scheduling profile or have access to a CRT terminal. Main use of this function will be for patient visits to areas such as social work service, dietetics, or a walk-in mental health clinic separate from the main facility. The recording of these visits is necessary for proper management and VA Central Office statistical gathering. This function will allow the rapid entry of visit information and visit disposition.

6. Scheduling Outputs - The following outputs are generated by the Scheduling subsystem. Examples of these outputs are contained in Appendix B.

- a. Appointment schedules (by hospital, module, clinic, or provider and by time of appointment, terminal digits of social security number, or patient's name alphabetically)
- b. Pending Clinic Dispositions
- c. Chart Work Up Sheet
- d. Routing Sheet
- e. Clinic Log
- f. Chart Pull List
- g. Appointment Letters
- h. No-Show Rebook Letters
- i. Clinic Rescheduling Letter
- j. Clinic Discharge Letter
- k. Ward Reminders
- l. Multiple No-Show List
- m. Clinic Activity Report
- n. 20% Sample Tape
- o. Missing Data Work Sheet
- p. AMIS 223 Report
- q. AMIS 167 Report

3.4 Hospital A/D/T Subsystem

The Hospital A/D/T Subsystem is responsible for the bed control functions associated with the admitting, discharging and transferring of a patient in bed status for either hospital beds, nursing home beds, or domiciliary beds. Control is placed at the bed level thereby providing accurate bed location information for ancillary support services such as dietetics, housekeeping, and chaplain service. On discharge, inpatient AMIS and Patient Treatment File (PTF) data are accumulated and reported at appropriate intervals.

The Hospital A/D/T subsystem will be responsible for the following functions:

1. Admission Function - This function allows the ability to admit a patient to bed status in a VA Medical Center, nursing home, or domiciliary. Due to the fact that the Application for Care function establishes a patient data base, the admission function need only accumulate and enter data specific to the admission process. This data will include such information as clinical service, admission diagnosis, and other VA Central Office specified statistical data. This function will also have ability to schedule admissions and accumulate the data necessary to produce the Gains & Loss Report and the bed census report. Also included in this function will be the ability to correct previous admission or discharge data.
2. Bed Control Function - This function allows for the assigning of beds, the transferring of patients from one bed to another, and the ability to indicate that a bed is vacant and available for occupancy.
3. Discharge Function - This function will allow the ability to indicate that a patient is discharged from the hospital. Data elements such as discharge diagnosis, future appointments, and patient treatment status are accumulated and entered at this time.
4. Miscellaneous Hospital A/D/T Functions -
 - a. View Inpatient Status - This function provides the user the ability to view on a CRT screen the current inpatient status of a veteran.
 - b. View Inpatient Activity - This function provides the user the ability to view on a CRT screen all bed transfers and other bed status activity for the present admission or a prior admission.

- c. View Prior Admissions - This function provides the user the ability to view on a CRT screen a list of all prior admissions. This data is listed in reverse date order with the most recent admission displayed first.
- d. View Ward Roster - This function provides the user the ability to view on a CRT screen the current bed occupants of a specified ward.
- e. Leave/Authorized Absence Status - This function provides the user the ability to enter/edit leave and authorized absence statuses for specified patients. Patients who have been on authorized absence (less than 96 hours) and who have not returned at the end of 96 hours of absence, will be automatically transferred to extended leave at the first midnight following the expiration of the 96 hours. The Hospital A/D/T Subsystem will then automatically adjust the daily census figures to reflect non-bed status since the initiation of the leave.
- f. Nursing Care Level - This function provides the user with the ability to enter/edit nursing care levels for all inpatients. This data is tabulated at the specified times and is accumulated for Nursing Service AMIS.
- g. Ward Clerk Entry - This function provides the ward clerk user with the ability to view and enter/edit inpatient Hospital A/D/T data appropriate for his/her ward.
- h. PTF Data Entry - This function provides the user the ability to enter/edit patient treatment file (PTF) data so as to prepare the PTF output report.
- i. Inactive Beds Entry - This function provides the user the ability to enter/edit the inactive bed status of specified beds and rooms. This function will be used to temporarily inactivate beds for remodeling, construction projects, etc. and for the subsequent reactivation of the beds.

5. Hospital A/D/T Outputs - The following outputs are generated by the Hospital A/D/T subsystem. Examples of these outputs are contained in Appendix C.

- a. Ward Roster - Administrative Version
- b. Ward Roster - Nursing Unit Version
- c. Inpatient List - Alphabetically .
- d. Gains and Loss Sheet - Local Version
- e. Gains and Loss Sheet - VA Central Office Version
- f. Seriously Ill List
- g. Leave Roster
- h. Leave Conversion List
- i. Nursing Care Level Statistics
- j. Missing PTF Data
- k. PTF Output Report/Tape
- l. AMIS 334-341 Report
- m. AMIS 200 Report (WCL)

3.5 Record Tracking Subsystem

The Medical Record Tracking Subsystem is responsible for the requesting, charging, recharging, and checking in of patients records and the maintenance of an accurate log of the current location of all charts. This subsystem is capable of performing these functions for multiple record jackets for each patient (e.g. clinical record, administrative record, radiological record). For those facilities where the administrative and clinical records are maintained together, this system will treat those jackets as one record.

The Medical Record Tracking Subsystem will be responsible for the following functions:

1. Request Record Function - This function allows the ability to view the current location of the medical and/or radiological record and if desired, to request the record to be sent to a specific location. The act of requesting a record will produce, in the appropriate record room, a request label.
2. Charge Out Record Function - This function allows the record room to charge out a record. If the charge out is in response to a pending request, this function can utilize a bar code reader system.
3. Re-charge Record Function - This function allows a user to re-charge a record to another user or location. This is utilized by non-record room personnel whenever a record is transferred from one person/location to another person/location.
4. Check-in Record Function - This function allows the record room to rapidly check-in all records returned. This function should utilize the bar code reader system in facilities with medium to large record turnover rates.
5. Appointment Record Request Function - This function allows the mass requesting of records for scheduled visits. This would be used in situations where the scheduling subsystem is not utilized.

6. Miscellaneous Record Tracking Functions -

- a. View Pending Request - This function provides the user with the ability to view on a CRT screen all pending medical records request.
- b. Fill Pending Request - This function provides the user with the ability to indicate the filling of a pending request. This function is usually performed utilizing a bar code reader. When this function is utilized, a message will appear on the CRT screen from which the original record request was made.
- c. Expedite Records - This function allows the user to enter a list of records which have not been found and need to be expedited due to a pending batch request.
- d. Charge Batch - This function allows the user to charge in mass all records requested under a batch request EXCEPT those records indicated as not being found under the Expedite Function described above.
- e. Message Transmit - This function allows the user to either transmit a message to the file room concerning a record request or for the file room to return a message to a requesting user.
- f. View Prior Record Transfers - This function allows the user to view on a CRT screen prior record transfers (i.e. record charges, recharges, and check-ins). This list appears in reverse date order with the most recent transfer being displayed first.
- g. Cancelled Request - This function allows the user to cancel a pending record request.
- h. Bar Code Reader - This function allows the usage of bar code readers for both charging out records and for checking records in.

7. Record Tracking Outputs - The following outputs are generated by the the Record Tracking subsystem. Examples of these outputs are contained in Appendix D.

- a. Pending Request List
- b. Daily Request Log
- c. Batch Request Labels
- d. Special Record Location List
- e. Expedite List
- f. Bar Code Labels
- g. Outstanding Chart List

3.6 System Support Functions

The following System Support functions are utilized by the MANCIS system:

1. **User Access Function** - This function provides the access security for the MANCIS System. It requires that all authorized users have a unique access code and that the user enter this code whenever they wish to enter the system. Checks are made to insure that a code is unique and not used simultaneously in two locations. Associated with each user's access code will be a list of those functions and subsystems that the particular user is allowed to access and this function will limit accessibility to those and only those functions. Finally, this function will record all user activity on the system.
2. **File/Table Management Function** - This function will allow the viewing, entering and editing of data into the many tables (i.e. dictionaries) utilized by the MANCIS system. The File Manager correctly prompts for necessary data fields, checks for validity of data entered, and assist the user in providing mandatory data points.
3. **Patient Identification Function** - This function allows for the rapid identification of patients whose file is currently in the computer memory. This identification process can be either by social security number or by patient name. Two methods of patient identifying are available. These are:
 - a. **Russell Soundex** - This method utilizes the Russell Soundex algorithm for grouping last names that sound similar. All look-ups are evaluated by soundex comparison of last name and first letter of first name. Matches can be further screened by entering the veterans date of birth or age. This method also allows the patient to be identified by his/her patient chart number (social security number). Any number of digits may entered (up to 9) and all patients with those numbers are displayed. If less than 9 digits are entered, the digits are assumed to be the terminal digits.
 - b. **File Manager** - This method utilizes a straight alphabetic look-up algorithm and mandates that an exact match between what was entered and the names in the file before a patient's name is displayed. This method also allows chart number look-up, but it will only evaluate the terminal 4 digits of

what ever number is entered.

4. **Background Task Management Function** - This function provides background task management ability for all output printing. All printing requests are placed in a task manager file with the date, time and printer desired placed in a schedule file. This allows a user to request the printing of an output at any future date or time and allows multiple users to request different outputs to be printed on the same device at the same time without any user delay. The background task manager will then schedule the printing of the requested (queued) reports on the desired device as soon as possible. Further, it is possible to establish routine (repetitive) queued jobs that will print at a specified time every day (or at other specified intervals) at a specific time on a specified device.
5. **Archive Records Function** - This function will allow the archiving of patient data no longer needed in an on-line status. The archive media will be disk and/or tape as appropriate for the various types of data.
6. **System Support Function Outputs** - The following outputs are generated by the system support functions. Examples of these outputs are contained in Appendix E.
 - a. Active User List
 - b. User Access Code Options

SECTION IV - OPERATING ENVIRONMENT

4.1 Data Input Conventions - Due to the fact that the Medical Administration Health Care Information System is utilized as an integral part of the day-to-day operation of Medical Administration Service, the data requirements of this system are identical to the data requirements of those MAS operations assisted by the system. A detailed listing of all data entry points is contained in the Operators/Users Manual for the MANCIS System. The following discussion details the various data entry conventions.

1. **Conversational Mode** - The MANCIS System utilizes a conversational (interactive) data entry mode. This mode is characterized by each question (e.g. MARITAL STATUS, DATE OF BIRTH, or TYPE OF VISIT) being displayed individually for the user. The system then waits for a response and evaluates the validity, correctness, and appropriateness of the response prior to the next question being displayed. Thus, if an inaccurate or an ambiguous response is entered by the user, the system is able to respond appropriately immediately after the data entry. Further, based on the entered response, the system can logically branch to the next appropriate question.
2. **Question Mark Responses** - In response to all questions displayed by the MANCIS System, the user is allowed to enter a question mark to indicate a lack of understanding. The system will respond with a help prompt and a list of the appropriate responses.
3. **Types of Questions** - Three types of questions are utilized by the MANCIS System. These are: 1) Yes/No Questions; 2) Free Text Questions; and 3) Table Look-up Questions.

Yes/No Questions are indicated by the question ending in a question mark. The appropriate response for the user is either the word "Yes" or "No". Further, the user may shorten either of these words by entering "Y", "YE", or "N" to indicate their response.

Free Text Questions will allow the user to enter a specified number of characters. Minimal syntax checking and no table look-up procedures are performed on the entry with the result being the data is stored exactly as the user entered it. The specific number of characters allowed for each Free

Text Question is detailed in the Users Manual.

Table Look-Up Questions are utilized wherever possible and allow the user to enter the information in a Free Text type format with the system comparing the entry to a specified table. The user is allowed to enter partial responses (e.g. "SEP" in response to Marital Status Question to mean separated). The system will evaluate the data entered. Three determinations are possible. These are: 1) there are no compatible matches in the table and the question is reasked; 2) there are multiple possible matches all of which are displayed and the user is allowed to select one; and, 3) there is one and only one possible match where upon the system will display the complete match and accept that data entry.

4. Default/Prompt Values - Wherever possible, the system will display default values for all questions displayed. The user is then allowed to accept the default answer by merely pressing the return key thereby minimizing the work involved. An example of default values would be either data points for which data has been previously entered (e.g. DATE OF BIRTH) or common responses to questions (e.g. Do you wish a 10-10?). This method of default/prompt values greatly enhances the data entry speed.
5. © Entry - In response to any question, the user may enter the up-arrow character to signify that they wish to back up to a previous question. This ability allows the user to rapidly return to a previously asked question and thereby either correct or change a previously entered value. This ability is recursive and thus the user may repeatedly enter the up arrow character to back up through multiple questions.

4.2 Data Security/Privacy - Due to the fact that the Medical Administration Health Care Information System records, stores, and outputs patient information, it is essential that the requirements of the 1974 Privacy Act be complied with. As detailed in FIPS Publication 41, a Security/Privacy Assessment has been performed with the results detailed below.

1. Processor, Memory, and On-Line Data Bases (Files) - The Processor, Memory, and On-Line Data Bases and Files should be contained in a room where physical access can be controlled. Personnel admitted to this area should be on a need-to-access basis only with all nonrequired personnel and non-VA personnel

accompanied at all times. The greatest concern of this section of the security analysis is not the inappropriate disclosure of information but rather the accidental and inappropriate erasure or destruction of data or equipment. Additionally, a back-up procedure should be established for the maintenance of duplicate data records in machine readable form. This could be either in the form of one-day and two-day back up disk copies, off-line journaling of data entry, or daily disk-to-tape copies. The method chosen for back-up procedures should be consistent with availability of hardware and the ability to rapidly reconstruct the data base if an accidental erasure occurs.

Physical security for the processor, memory/data bases should also include appropriate environmental controls, appropriate electrical filtering and power conditioning and adequate availability of fire protection equipment. Further, appropriate monitoring equipment or monitoring procedures should be available to assess the environmental conditions during operation. This should include both temperature and fire monitoring.

2. Off-Line Back Up and Archival Files - All Off-Line Back Up and Archival Files should be protected from physical damage, accidental loss, and inappropriate access. Thus, such files should not be stored in the same area as the main processor unless there is adequate protection against environmental changes and the possibility of fire. Further, an inventory of archival and back up materials should be maintained and regularly verified so as to decrease the possibility of accidental loss.
3. Outputs - All outputs from the Medical Administration Health Care Information System that contain patient identifiable information should be utilized and disposed of as if the information were part of the patient's record. That is to say, this information should be available on a need-to-know basis only and that facilities should protect against the accidental disclosure of this information. The MARCIS System allows the system manager to specifically limit the ability of each user to those outputs that he/she needs in order to perform their specific job function. Further, the MARCIS System allows for the permanent recording of all output requests and the requesting user, and places the requesting user's initials on all pages of the output. Regular review of this information should be performed by the system

manager or the Privacy Act Officer to insure that there is no improper utilization of patient information. Finally, it should be the responsibility of the system manager and/or the Privacy Act Officer to monitor the disposal of all documents containing patient identifiable information.

4. Interactive Terminals - Access to all interactive terminals should be limited to a need-to-access basis. The MANCIS System requires that each individual user have a unique access code. The system manager should be responsible for insuring that these codes are not made public, and that individual users understand the responsibility associated with having an access code. Further, the system manager should regularly change all user access codes. Codes of departing users or users whose job functions have changed should be inactivated immediately. The MANCIS system maintains a record of not only current codes, but also all prior codes so that a definitive length of time elapses before a code is re-assigned.

The MANCIS System has inherent in it many security/privacy considerations. Besides the dependence upon unique access codes, the system also utilizes timed reads for all input requests. Any time data is displayed on a terminal and the system is either awaiting response to a question or is merely in a "hold" for data review, a timer (usually set at 60 seconds) is enforced. If after the designated period of time, no user interaction has occurred, the system automatically returns to the user access sign-on routine. This procedure prevents terminals that are accidentally "walked away from" from being available to unauthorized users. Further, the MANCIS System allows the user to respond to any question with a site specific code with the resulting action being the return to the user access sign-on routine. This allows a user to indicate to the system that they are through using the terminal and that no further access should be made using their code.

Additional MANCIS security includes the absolute prohibition of two terminals to utilize the same access code simultaneously and the constant monitoring of improper access code entries. The security protection procedures will in fact make a terminal totally inaccessible to any user (until the system manager frees it) if a specified number of

inappropriate codes have been consecutively entered. This is to prevent an individual from attempting to randomly break the security system. Additional security should be provided by placing CRT terminals so as not to be visible to unauthorized users and non-VA employees and to place printers in controlled access areas.

In addition to the above security procedures, the MANCIS System records all user access sign-ons, patients accessed, and the systems, options, and routines referenced. Further, the system allows for multiple institutions or groups of users to access the system totally independent of each other with totally independent data bases. Finally, the MANCIS System, as described in the data input conventions, checks all data input for validity and consistency.

5. Development/Modification Security - The Medical Administration Health Care Information System allows for all development and modification to take place in a separate file space from regular active patient data. Thus, all development and testing can be done without accessing or risking data errors in true patient data. Further, all changes in programs that result in data entry, data editing, or other possible data integrity changes should be audited for accuracy prior to implementation.
6. Telecommunication - All access to the MANCIS System via telecommunication lines should involve strict identification of a user via a unique user access code, should involve the limitation of access to specific user defined functions, and should involve the recording of all user activity. While telecommunication of patient data can be seen as a high security risk, the benefits of such action are substantial. Any system maintaining telecommunication ability should involve the system manager and Privacy Act Officer in the development of policies and procedures to not only limit access to a need-to-know basis but also to enforce continuous monitoring of such activity.
7. Disaster Plan - Due to the nature of the MANCIS System and the security needs of the data contained within the system, a disaster plan for the MANCIS System Computer and data bases should be developed by each implementation site. This disaster plan should include procedures for power outages, flooding and other environmental conditions, and hospital procedures to perform MAS functions in case of the

unavailability of the MANCIS System.

4.3 Operating System and Software Requirements - The Medical Administration Health Care Information System requires an ANSI Standard MUMPS Operating System capable of supporting the necessary number of terminals and mass storage of the particular implementation requires. All programming exceptions to ANSI Standard MUMPS are clearly delineated in the technical documentation and are either file driven parameters or easily altered hard coding. It is the intent of the MANCIS System to be as hardware and software implementation independent as possible.

4.4 Equipment Requirements - The MANCIS System does not require any specific hardware. The major restraint is that an ANSI Standard Operating System be available for that hardware and that sufficient terminals are available for the work productivity required. Specific characteristics of individual terminal manufacturers have been avoided. The only characteristics for equipment are as follows:

- 1) CRTs - minimum 24 by 80 character screen size;
X-ON and X-OFF protocol support;
character mode;
- 2) Printer - All MANCIS printouts are designed for 8 1/2 by 11 inch paper; (9 1/2 by 11 inch paper with 1/2 inch tear strips is recommended.)
- 3) Disk Space - Disk space requirements are approximately 2.0 to 2.5 KB per active patient. This includes space for all temporary files, programs, and the patient data base.
- 4) Magnetic Tape - For distribution purposes, the MANCIS System requires an industry standard nine-track magnetic tape unit capable of supporting a 7-inch tape. The MANCIS System can be distributed in either 800 BPI or 1600 BPI as desired by the implementor.
- 5) CPU - No specific requirements.

4.5 Personnel Requirements - The MANCIS System is designed to not require any programming or operating personnel on site. Operational needs involve daily back up of the mass storage which can be designed to be accomplished automatically and thereby require approximately ten minutes of untrained personnel time. System management requirements should require between .1 and .75 FTEE of noncomputer trained personnel. It is anticipated that a GS7 level, MAS-familiar individual would be able to easily perform the system manager functions.

APPENDIX A

REGISTRATION SUBSYSTEM OUTPUTS

TEST	REGISTRATION LOG			Page:
0504	OKLAHOMA CITY VAHC			
002	MAY 4, 1982			
T	Patient	Visit	Disposition	
1:30A	DUSTMAN, JOHN KYLE P442-07-2833	1010	2:53A	INELIGIBLE FOR CAR
1:45A	SAMPLE, JOHN FREDER 574-66-2222	1010	3:07A	FUTURE APPOINTMENT SCHEDU
2:28A	DALPHINA, HENRY 456-15-1247	1010	3:58A	NO CARE OR TREATMENT REQUI
2:46A	CALLAWAY, BERNARD R 188-39-2938	1010	4:10A	LEFT BEFORE EXAM
3:34A	GREEN, JAMES FREDER 321-33-6789	1010	7:01A	EXAM NOT COMPLETE
7:30A	GARCIA, JOSEPH HENR 789-99-9999	1010	8:52A	REFUSED TREATMENT
7:54A	BOUCHERIE, JAMES ER 655-89-3020	1010	7:59A	ADMIT
9:57A	ELAN, ROBERT ANTHON 100-38-3829	USCH	11:26A	NURSING HOME
10:32A	WILLIS, TOBY CLARK 432-43-2929	1010	12:48P	NURSING HOME
12:12P	VASSINDER, MACEL B. 757-38-3838	USCH	1:52P	CANCEL APPOINTMEN
3:07P	PURDY, DANIEL STEWA 892-73-8383	USCH	5:56P	TREATMENT PROVIDE NO RE
4:57P	MAHAN, JOEL ANDREW 892-33-8144	USCH	9:23P	INELIGIBLE FOR CA
4:58P	PUBLIC, JOHN Q 113-48-3527	USCH	8:51P	KEEP PREVIOUS APPOINT
5:22P	SMITH, HOARANCE 482-70-0057	USCH	10:25P	DEAD ON ARRIVAL
5:57P	MCDOWELL, MALCOLM M 100-38-2999	1010	8:35P	LEFT BEFORE EXAM
6:16P	ROGERS, WILLIAM HEN P836-05-0347	USCH	8:35P	CANCEL APPOINTME:
			(MAY 3, 1982)	
7:52P	DANIELS, JACK 444-33-2222	1010		
8:56P	HARBUL, TIMMY P793-12-1212	USCH	10:49P	DOMICILIARY
10:16P	TALLANT, WYATT LEE 999-20-3000	USCH		

TEST
0504
702

REGISTRATION LOG
OKLAHOMA CITY VANC
MAY 4, 1982

Page:

Disposition	1010	USCH	TOTAL
PENDING	1	1	2
ADMIT	1		1
TREATMENT PROVIDED NO RETURN		1	1
FUTURE APPOINTMENT SCHEDULED	1		1
NO CARE OR TREATMENT REQUIRED	1		1
KEEP PREVIOUS APPOINTMENT		1	1
LEFT BEFORE EXAM	2		2
EXAM NOT COMPLETE	1		1
INELIGIBLE FOR CARE	1	1	2
REFUSED TREATMENT	1		1
DEAD ON ARRIVAL		1	1
C. DEL APPOINTMENT		2	2
DOMICILIARY		1	1
NURSING HOME	1	1	2
TOTAL	10	9	19

TEST
7503
58

DELAYED DISPOSITION LIST
OKLAHOMA CITY VAMC
For MAY 4, 1982

Page: 1

MAHAN, JOEL ANDREW 892-33-8144

Disposition: INELIGIBLE FOR CARE

Process Time: 4 hrs. 26 min.

Time In: 4:57 PM

Time Out: 9:23 PM

Delay

Reason: DELAY IN BEING SEEN

(TEST,JOHN)

HAS Comments:

PUBLIC, JOHN Q

113-48-3527

Disposition: KEEP PREVIOUS
APPOINTMENT

Process Time: 3 hrs. 32 min.

Time In: 4:58 PM

Time Out: 8:51 PM

Delay

Reason: ADMINISTRATIVE DELAY

(TEST,JOHN)

HAS Comments:

TEST
403

DELAYED DISPOSITION LIST
OKLAHOMA CITY VAMC
For MAY 4, 1982

Page: 2

Visit Summary

Patients Seen	19
Pending Disposition	2
Disposition Of Error	0
Disposition Time < 5 Min	1
Late Reasons Not Counted	4

Not Seen	12
----------	----

Disposition Time Summary

<1 Hr	
1-2 Hrs	7
2-3 Hrs	3
3-4 Hrs	1
4-5 Hrs	1
5-6 Hrs	
6-7 Hrs	
7-8 Hrs	
>8 Hrs	
Total	12

Late Reason Summary

ADMINISTRATIVE DELAY	1	COMPUTER INOPERABLE
CONSULT DELAY		DELAY IN BEING SEEN
DELAY IN LAB/XRAY RESULTS		DISPOSITION NOT ENTERED
OTHER DELAY		REASON NOT KNOWN

Average Disposition Time: 2 hrs and 13 min

PENDING DISPOSITION LIST

TEST
0303
101PENDING REGISTRATION VISITS
OKLAHOMA CITY VANC
MAY 5, 1982 at 1:01 AM

Page:

Visit Date: MAY 04, 1982

Time	Patient	User	Type of Visit
7:52 PM	DANIELS, JACK	444-33-2222	1010
10:16 PM	TALLANT, WYATT LEE	999-20-3000	USCH

Number Pending: 2

Total Pending: 2

VA FORM 10-10
APPLICATION FOR CARE

Form Approved
FD-10 (Rev. 10-1-73)
Use after 10-1-73

INSTRUCTIONS ON REVERSE OF FORM

APPLICATION FOR MEDICAL BENEFITS	
1. TYPE OF QUALIFYING APPLICANT FORM	
☐ HOSPITAL TREATMENT ☐ HOME-CARE ☐ OUT-PATIENT MEDICAL ☐ OUT-PATIENT DENTAL ☐ NURSING HOME CARE	
2. APPLICANT'S NAME (Last, first, middle initial)	
NONAME, JOHN F.	
3. ADDRESS (Street, City, County & ZIP Code)	
1234 EAST MAIN OKLAHOMA CITY, OK. 73112	
4. DATE OF BIRTH	
FEB 23, 1948	
5. PLACE OF BIRTH	
DALLAS, TX	
6. SOCIAL SECURITY NO.	
222-66-3425	
7. CLAIM NO.	
999999999	
8. ARE YOU?	
☒ A. SERVICE CONNECTED ☐ B. RECEIVING A VA PENSION ☐ C. RECEIVING MILITARY RETIREMENT PAY	
IF A, B, or C is checked, give disability, percent and/or amount received: VAP: \$93.50	
9. RELIGION	
BUDIST	
10. MARITAL STATUS	
☒ MARRIED ☐ NEVER MARRIED ☐ SEPARATED ☐ DIVORCED ☐ WIDOWED	
11. PERSON TO BE NOTIFIED IN CASE OF AN EMERGENCY	
NAME AND ADDRESS	
MARY NONAME 1234 EAST MAIN OKLAHOMA CITY OK 73112	
12. NAME, ADDRESS AND TELEPHONE NO. OF EMPLOYER	
VA MEDICAL CENTER (GOV) 921 WE 13 OKLAHOMA CITY, OK 73104	
13. OCCUPATION	
WELDER	
14. HEALTH INSURANCE COVERAGE (List policies and numbers)	
GOVERNMENT SPONSORED	
15. IS YOUR NEED FOR CARE:	
☒ NO ☐ YES	
16. HAVE YOU PREVIOUSLY RECEIVED CARE FROM VA?	
☒ NO ☐ YES	
17. IF YES, WHAT KIND, WHERE AND WHEN	
18. LOCATION OF CLAIMS FOLDER	
MUSKOGEE RO	
19. I HEREBY AFFIRM THAT I AM ☐ ABLE ☐ UNABLE TO DEFRAY THE NECESSARY EXPENSES OF THE MEDICAL CARE FOR WHICH I AM APPLYING	

20. ACTIVE MILITARY SERVICE AND RECORD OF ACTIVE DUTY STATUS			
☐ ARMY ☐ NAVY ☒ AIR FORCE ☐ MARINE CORPS ☐ COAST GUARD ☐ OTHER (Specify)		SERVICE NUMBER	
☐ WWII ☐ KOREA ☐ VIETNAM ☐ OTHER (Specify)		DATE ENTERED SERVICE	
☐ WWII ☐ KOREA ☐ VIETNAM ☐ OTHER (Specify)		DATE SEPARATE	
☐ WWII ☐ KOREA ☐ VIETNAM ☐ OTHER (Specify)		23456789	
☐ WWII ☐ KOREA ☐ VIETNAM ☐ OTHER (Specify)		05-04-1975	
☐ WWII ☐ KOREA ☐ VIETNAM ☐ OTHER (Specify)		01-03-1977	
TYPE OF DISCHARGE HONORABLE			
21. DENTAL CONDITION (Fill this in if benefit applied for is related to a dental condition.)			
A. WAS IT CAUSED BY INJURY IN MILITARY SERVICE?		B. WERE ANY TEETH EXTRACTED IN MILITARY SERVICE?	
☒ NO ☐ YES		☒ NO ☐ YES	
22. MEDICAL OR DENTAL TREATMENT RECEIVED DURING OR AFTER MILITARY SERVICE			
A. DATES		B. LIST CONDITIONS TREATED, PLACE OF TREATMENT AND FROM WHOM TREATMENT WAS RECEIVED (If necessary, continue on a sheet of plain paper)	
C. APPROXIMATE DATE WHEN WAS FIRST			
NOTE - The law (38 USC 5320 et seq.) provides that upon the death of any veteran receiving care or treatment by the Veterans Administration in any institution (hospital, nursing home, etc.) or in his or her own home, all personal property, including money or belongings in bank, and all claims and claims in action, owned by the veteran, and not disposed of by will or otherwise, will become the property of the United States in trust for the Post Office.			
23. DESIGNATE THE FOLLOWING PERSONS, IN THE ORDER LISTED, TO RECEIVE POSSESSION OF ALL PERSONAL PROPERTY LEFT ON THE PREMISES UNDER YOUR CONTROL, AFTER I LEAVE SUCH PLACE OR AT THE TIME OF MY DEATH. (This does not constitute a will or transfer of title.)			
NAME, ADDRESS AND ZIP CODE		RELATIONSHIP	
MARY NONAME 1234 EAST MAIN OKLAHOMA CITY, OK 73112		WIFE	
The information requested on this form is collected under authority of Title 38, U.S.C., "Veterans' Benefits," and will be used to determine your eligibility for benefits, identify your medical records, and provide basic data for your treatment. Additional information, such as medical history, may be collected during the medical evaluation or treatment. The information you supply also may be disclosed outside the VA as permitted by law or as stored in the "Medical of System Records" published in the Federal Register in accordance with the Privacy Act of 1974. Disclosure is voluntary. However, failure to furnish the information will deny you the right to receive your request promptly and give your medical needs. Failure to furnish the information will have no adverse effect on any other benefits to which you may be entitled.			
24. I UNDERSTAND THE QUESTIONS, AND ALL ANSWERS ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.		FOR VA USE ONLY	
SIGNATURE OF APPLICANT OR APPLICANT'S REPRESENTATIVE		DATE	
		ADMISSION DATE	
		AUTHORITY FOR OR TREATMENT	

VA FORM 7131
ELIGIBILITY DATA REQUEST FORM

NAME, JOHN F (222-66-3425)

CLAIM: 999999999

1234 EAST MAIN
OKLAHOMA CITY, OK 73112

DISKNOCK RD

FOR CO-RO-RPI
USE ONLY

BRANCH OF SERVICE 04-25-82	1. Complete this section if claim number is not available.	FILE NUMBER
OK CITY	AIR FORCE	CD
635	SERIAL NUMBER 123456789	NO
	LAST PERIOD OF SERVICE FROM MAY 4, 1975 TO JAN 3, 1977	DATE
	DATE OF BIRTH FEB 23, 1948	DATE

(Obtain from Patient Data Card, or type or print name, claim no., Serial Number, etc., address)

PART I - PURPOSE (Check appropriate box and complete)			
XX ADMISSION NOTICE	1. IN PORT (Leave over)	2. STATUS (Check)	3. VA HOSPITAL PATIENT
	☒ INITIAL ☐ SUPPLEMENTAL	☒ VA HOSPITAL PATIENT	☐ NON-VA HOSPITAL PATIENT
4. IF COMMITTED, ENTER COURT, LOCATION, AND DATE COMMITTED			
5. IF INCOMPETENT, ENTER COURT, LOCATION, AND DATE COMMITTED			
6. NO QUEST FOR INFORMATION: ADJUDICATIVE ACTION			
7. ADJUDICATIVE ACTION (Check one)			
☐ A. FILE NO.	☐ B. DECISION ON OTHER THAN HONORABLE DISCHARGE	☐ C. SERVICE CONNECTION	☐ D. DATE AND TYPE OF SEPARATION FROM SERVICE
☐ E. ADJUDICATIVE ACTION (When this is checked, include in Item 8. data for determination of service connection: date, character, nature, or degree of condition; name and location of hospital, clinic, force and station where applicant was treated; nature of treatment; date of treatment and conditions required)			
8. REMARKS FREE TEXT REMARKS UP TO 80 CHARACTERS			
9. ADMISSION DIAGNOSIS - FREE TEXT			
PART II - EXTRACT FROM CLAIM FOLDER			
1. NO MONETARY BENEFITS	2. ACTION	3. COMPETENT	4. INCOMPETENT
☐	☐	☐	☐
5. COMPENSATION	6. PENSION	7. RETIREMENT PAY	8. BY WHOM PAID
☐	☐	☐	☐
9. VETERAN HAS ENTITLEMENT FOR:			
A. AID AND ATTENDANCE ☐ YES ☐ NO		B. HOUSEHOLD ☐ YES ☐ NO	
10. APPOINTMENT			
11. GUARDIAN			
12. SERVICE CONNECTION CONDITIONS (Complete when information on necessary benefits is required, even if only 95%)			
13. DIAGNOSIS			
14. NAME			
15. FACILITY NAME AND NUMBER			
16. SIGNATURE			
17. DATE			
18. SPECIAL REPORT (Specify in Remarks)			
19. COMPETENCY REPORT			
20. VA FORM 21-2880			
21. ASSET INFORMATION			
22. ADMISSION REPORT			
23. OUTPATIENT TREATMENT REPORT			
24. FROM: TO:			

PENDING 7131 LIST

TEST
0504
0010UN-MAILED 7131 LIST
OKLAHOMA CITY VAMC
MAY 4, 1982

Pa

Patient		Date Printed
VIDAL, CORE	737-89-9003	APR 20, 1982
NONAME, ERNEST	789-77-8877	APR 21, 1982
NONAME, JETHRO	334-33-3333	APR 23, 1982
GONZALES, MICHAEL P.	123-55-5555	APR 23, 1982
DANIELS, JACK	444-33-2222	APR 24, 1982
HIGH, GLENN AUGUSTA	789-77-7888	APR 24, 1982

TEST
0504
2026PENDING 7131 LIST
OKLAHOMA CITY VAMC
MAY 4, 1982

Pa

Patient		Date Mailed	User	Interim Res
SAMPLE, JOHN FREDERICK	574-66-2222	APR 3, 1982	TEST	04-23-8
NONAME, EDWARD	445-44-1111	APR 5, 1982	TEST	
JOHNSON, JOHN	333-77-7777	APR 7, 1982	JN	
SAMPLE, JOHN	333-33-3333	APR 8, 1982	JN	
NONAME, EVELYN	897-33-4455	APR 8, 1982	TEST	
JONES, TOMMY	555-55-5555	APR 10, 1982	CCG	
LYON, JACKSON F.	444-44-5055	APR 11, 1982	CCG	
PUBLIC, JOHN Q	113-48-3527	APR 12, 1982	JN	
JONES, JOE	111-22-3333	APR 13, 1982	TEST	
NORMAN, ERNEST	231-33-7788	APR 13, 1982	CCG	
WASHINGTON, GEORGE	789-77-7888	APR 13, 1982	JN	
THRELKELD, EDWARD J	475-44-3334	APR 14, 1982	JN	04-28-
SON, SCOTT	847-05-1005	APR 15, 1982	JN	
JOHNSON, TOM	888-99-1235	APR 16, 1982	TEST	
FRENCH, ROBERT K	444-48-5055	APR 17, 1982	JN	
NONAME, CARL L	195-11-2050	APR 19, 1982	JN	
ALLEN, BILL	237-77-7777	APR 19, 1982	CCG	
THOMPSON, THOMAS	123-33-1234	APR 19, 1982	JN	
WALTON, JOHN	013-33-7777	APR 19, 1982	JN	

TEST
0504
701

DUPLICATE SOCIAL SECURITY NUMBER EXCEPTION LIST
OKLAHOMA CITY VAMC
MAY 4, 1982

Page:

1-33-3333

SAMPLE, JOHN
STALIN, CALEB RYDEL

MALE
MALE

DOB: MAR 23, 1932
DOB: MAR 13, 1933

411-00-1234

NONAME, JANE ELIZABETH
TEST, EMMA JANE
MONDAY, CANDY ELAINE
NORMAN, ORA LYNN

FEMALE
FEMALE
FEMALE
FEMALE

DOB: JAN 1, 1901
DOB: OCT 31, 1923
DOB: OCT 31, 1923
DOB: OCT 31, 1923

789-77-7888

NICH, GLENN AUGUSTA
WASHINGTON, GEORGE

MALE
MALE

DOB: JAN 12, 1927
DOB: JAN 12, 1927

TOTAL NUMBER OF PATIENTS: 8
TOTAL DUPLICATE NUMBERS: 3

TEST
704

PSEUDO SOCIAL SECURITY NUMBER EXCEPTION LIST
OKLAHOMA CITY VAMC
MAY 4, 1982

Page:

PATIENT NAME	PSEUDO SSN	SEX	DATE OF BIRTH
COUSARD, BRENDA LEE	F761-01-0171	FEMALE	JAN 1, 1971
HANBUL, TIMMY	F793-12-1212	MALE	DEC 12, 1912
LAMPRIGHT, SUSAN G.	F734-12-1212	FEMALE	DEC 12, 1912
NIX, PANSY	P625-12-1212	MALE	DEC 13, 1912
DUSTMAN, JOHN KYLE	P442-07-2833	MALE	JUL 28, 1933
ROGERS, WILLIAM HENRY	F836-05-0347	MALE	MAY 3, 1947

TOTAL NUMBER OF PATIENTS: 6

TEST
505
0

REGISTRATION DISPOSITION SUMMARY STATISTICS
OKLAHOMA CITY VAMC
For Period: MAY 4, 1982 to MAY 5, 1982

Page: 1

DISPOSITION	AFC VISITS	OTHER REG. VISITS	TOTAL
ADMIT	1		1
TREATMENT PROVIDED NO RETURN		1	1
FUTURE APPOINTMENT SCHEDULED	1		1
NO CARE OR TREATMENT REQUIRE	1		1
KEEP PREVIOUS APPOINTMENT		1	1
LEFT BEFORE EXAM	2		2
EXAM NOT COMPLETE	1		1
INELIGIBLE FOR CARE	1	1	2
REFUSED TREATMENT	1		1
DEAD ON ARRIVAL		1	1
CANCEL APPOINTMENT		2	2
DOMICILIARY		1	1
NURSING HOME	1	1	2
TOTAL	9	8	17

TEST
1.05
49

AMIS 331
APPLICATIONS FOR CARE TOTALS
OKLAHOMA CITY VAMC
MAY 3, 1982

Page

For Period
MAY 4, 1982 to MAY 3, 1982

PRIOR PENDING			0
APPLICATIONS RECEIVED	(1)		10
IN NEED OF CARE			
HOSPITAL	(2)	1	
OUTPATIENT CARE			
NSC	(3)	0	
SC 50% OR MORE	(4)	0	
SC LESS THAN 50%	(5)	1	
NURSING HOME	(6)	1	
DOMICILARY	(7)	0	
NOT IN NEED	(8)	1	
CANCELED	(9)	5	
		-----	(9)
APPLICATIONS PENDING	(10)		1

ELIGIBILITY STATUS OF APPLICANTS

SERVICE CONNECTED		
50% OR MORE	(11)	0
10% TO 40%	(12)	1
0%	(13)	0
ASA AND PENSION	(14)	0
PENSION ONLY	(15)	0
NON SERVICE CONNECTED	(16)	7
NON VET.	(17)	0

WORLD WAR I VETERAN VISIT REPORT
LOAD LIST

TEST
7504
.022
(

PATIENT LOAD LIST
OKLAHOMA CITY VAMC
MAY 4, 1982

Page 1

KILEOP, GEO	431-40-0001
VIDAL, GORE	737-89-9003
WILSON, SCOTT	847-05-1005
KINGSLEY, BRANDON	441-44-1111
NONAME, EDWARD	445-44-1111
NIX, PANSY	P625-12-1212
LAMPRIGHT, SUSAN G.	P734-12-1212
TWO, DUMMY	202-22-2020
EGGS, MALCOLM	000-11-2222
CLEMONS, SAMUEL	333-32-3333
SAMPLE, JOHN	333-33-3333
NAME, JETHRO	334-33-3333
TEST, EMMA JANE	411-00-1234
M JAY, CANDY ELAINE	411-00-1234
JOHNSON, TOM	888-99-1235
CLARK, ROY	444-44-4444

PHARMACY ONLY LOG

TEST
0504WORLD WAR I VETERAN VISIT REPORT
OKLAHOMA CITY VAMC
For Month: MAY 1982

Page: 1

DISPOSITION PENDING	0
UN-SCHED. ANC VISITS	1
CLINIC VISITS	0
DISPOSITION PENDING	0

TOTAL	1

TEST
0504
2028PHARMACY ONLY VISIT LOG
OKLAHOMA CITY VAMC
MAY 4, 1982

Patient		Time
LYON, JACKSON F.	444-44-5055	7:13 PM
JONES, JOE	111-22-3333	7:19 PM
SAMPLE, JOHN FREDERICK	574-66-2222	7:20 PM

Total Pharmacy Only Visits 3

TEST
"05
-1

AHIS SEGMENT 358
OKLAHOMA CITY VANC

Page 1

For Period
MAY 4, 1982 to MAY 5, 1982

APPLICANTS WITH VIETNAM ERA SERVICE

IN NEED OF CARE	(1)	3
NOT IN NEED OF CARE	(2)	1
ON WAITING LIST END OF PERIOD	(3)	
ADMITTED	(4)	1
BED OCCUPANTS REMAINING END OF PERIOD	(5)	

APPLICANTS 65 YEARS OF AGE OR OLDER

IN NEED OF CARE	(6)	1
NOT IN NEED OF CARE	(7)	1
ON WAITING LIST END OF PERIOD	(8)	
ADMITTED	(9)	0
BED OCCUPANTS REMAINING END OF PERIOD	(10)	

APPENDIX B

SYSTEM SUPPORT FUNCTION OUTPUTS

TEST
04
-56

ACTIVE USER LIST
OKLAHOMA CITY VAMC
MAY 4, 1982

Page: 1

User	Initials
CAMPBELL, GLENN	GFC
CLEKK, CARL	CCC
DEADBEAT, DELBERT	DED
JAMES, WILLY	WWJ
JONES, JOHN JAMES	JJJ
MADHAT, PATTI	MMP
MANAGER, MIKE A	MAM
TEST, JOHN	TEST

Total active users: 8

TEST
0004
:7

USER ACCESS CODE OPTIONS
OKLAHOMA CITY VAMC
MAY 4, 1982 at 11:57 PM

Page: 1

TEST,JOHN

Initials: TEST

New Patient Option

Programmer Option

 REGISTRATION

LOG-IN	PHARMACY ONLY	DISPOSITION
LOG VISIT		
RETRO-LOG		
PATIENT DATA EDIT		
VIEW	EXTENDED VIEW	DEMOGRAPHIC EDIT
VA DATA EDIT	TREATMENT STATUS EDI	LOAD PATIENT DATA
ELIGIBILITY		
MAIL-OUT	SUSPENSE FILE EDIT	VERIFY
REGISTRATION LOG		
LOG VIEW	PENDING LIST VIEW	DELAYED DISPOSITION
QUEUE REGISTRATION		
10-10	PENDING DISPOSITION	REGISTRATION LOG
DELAYED DISPOSITION	SSN EXCEPTION LIST	7131
LOAD LIST	WWI VETERAN VISIT RE	AMIS 331 REPORT
DISPOSITION SUMMARY	PENDING 7131s	PHARMACY-ONLY LOG
AMIS 358 REPORT		

UTILITY/SYSTEM MANAGEMENT

USER ACCESS		
HOME SCREEN MESSAGE	RELEASE ACCESS CODE	ASSIGN ACCESS CODE
MAIL BOX/MESSAGE	ARCHIVE ACCESS DATA	
FILE MANAGER/Dictionary		
FILE MANAGER		
QUEUE UTILITY REPORTS		
USER OPTIONS	ACTIVE USERS LIST	
